All India Council for Technical Education

Department of Science & Technology
Government of India

Confederation of Indian Industry

India Innovation Initiative - i3 2014 National Fair

"Recognizing India's most potential Entrepreneurs of the Year"

18 November 2014, India Expo Center

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Our Partners

Young Indians WE CAN WE WILL

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BACKGROUND

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BACKGROUND

Issues/Problems/Crisis lead to various thoughts in our minds, which give birth to ideas. When these ideas are expressed and acted upon they transform into solutions, discoveries and sometimes INNOVATIONS.

In today's competitive world, India needs to come up with innovative solutions to counter the global challenges and grow simultaneously to address the pressing needs of its billion plus population. This goal can only be achieved by empowering student entrepreneurs to think independently and take risk in transforming their ideas into value propositions.

In this respect, to promote and inculcate a spirit of innovation in India, and to encourage application of breakthrough technology / ideas in society, CII has been working with the government, industry leaders, funding bodies, incubators and other stakeholders. The India Innovation Initiative- i3, run by CII with partners such as DST, AICTE, industry, i4C and incubators for the past five years is a glowing example of such an initiative which encourages commercialization of innovation for all sections of society.

To address the needs of innovators (primarily students from engineering and technical courses), CII has created the platform of "India Innovation Initiative 2014" where students from all regions across the country will participate, compete and get recognized for creating most innovative solutions for various industrial and societal challenges. A large section of industry, investors and incubators will be invited to scout the best solutions and fund the potential projects leading to commercialization of technology.

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LIST OF PARTNERS

Technology Information, Forecasting and Assessment Council Technology Refinement and Marketing Program (TIFAC-TREMAP)

TIFAC had initiated Technology Refinement and Marketing Programme (TREMAP) in 2009, to work towards pushing the innovative technologies, up the commercialization cycle, towards market through a network of Technology Commercialization Facilitators (TCFs) and establishing an enabling ecosystem for the same.

Indian Science and Technology Entrepreneurs Parks and Business Incubator Association (ISBA)

The Indian STEP and Business Incubator Association (ISBA) was set up in 2004 as a registered professional body to promote business incubation activities in the country through exchange of information, sharing of experience, and other networking assistance among Indian Business Incubators, Science and Technology Entrepreneurs Parks (STEPs) and other related organizations engaged in the promotion of start-up enterprises.In order to create a platform of new venture creation and to facilitate growth of existing enterprises ISBA organizes the Annual Conference.It is the largest networking event of Science and Technology Entrepreneurs Parks,Business Incubators, incubatee companies,government support agencies, financial institutions, VCs, angel investors etc. that are driving incubation movement in

Indian Private Equity and Venture Capital Association (IVCA)

Indian Private Equity and Venture Capital Association (IVCA) is the oldest, most influential and largest member-based national organization of its kind. It represents venture capital and private equity firms to promote the industry within India. It seeks to create a more favorable environment for equity investment and entrepreneurship. It is an influential forum representing the industry to governmental bodies and public authorities.

IVCA members include leading venture capital and private equity firms, institutional investors, banks, corporate advisers, accountants, lawyers and other service providers to the venture capital and private equity industry. These firms provide capital for seed ventures, early stage companies, later-stage expansion and growth finance for management buyouts/ buy-ins.

Young Indians (Yi)

An integral part of the Confederation of Indian Industry (CII), India's premier business association, formed in the year 2002, with an objective of creating a platform for young Indians to realize the dream of a developed nation.

All India Council for Technical Education

All India Council for
Technical Education

Technical education in India contributes a major share to the overall education system and plays a vital role in the social and economic development of our nation. In India, technical education is imparted at various levels such as: craftsmanship, diploma, degree, post-graduate and research in specialized fields, catering to various aspects of technological development and economic progress.

All India Council for Technical Education (AICTE) was set-up in November 1945 as a national level Apex Advisory Body to conduct survey on the facilities on technical education and to promote development in the country in a coordinated and integrated manner. And to ensure the same, as stipulated in, the National Policy of Education (1986), AICTE be vested with statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development and management of technical education in the country.

Angel And Incubator Partner
Indian Angel Network (IAN)

Started in April 2006, the Indian Angel Network is a unique concept which brings together highly successful entrepreneurs and CEOs from India and around the world who are interested in investing in startup / early stage ventures which have the potential of creating disproportionate

Mentoring Partner
TiE Delhi- NCR

TiE Delhi-NCR
Fostering Entrepreneurship Globally
www.delhi.tie.org

The Indus Entrepreneurs (TiE), was founded in 1992 in Silicon Valley by a group of successful entrepreneurs, corporate executives, and senior professionals with roots in the Indus region. There are currently 61 chapters across 17 countries. TiE's mission is to foster entrepreneurship globally through mentoring, networking, and education. Dedicated to the virtuous cycle of wealth creation and giving back to the community, TiE's focus is on generating and nurturing our next generation of entrepreneurs.

TiE has the largest pool of intellectual capital globally which involves entrepreneurs, VC's, angel investors, service providers, mentors, large corporations etc, which creates a powerful network of opportunities which TiE engages into creation and delivery of real value for the entrepreneurial ecosystem.

With over 100 events annually including mentoring clinics, seminars, focused workshops, networking evenings, TiE Delhi- NCR has been working with a focus on creating collaborative opportunities for members, which have resulted in growth oriented opportunities for businesses.

Innovating with feedback from the community, TiE Delhi- NCR is reaching out to members with new initiatives such as a TiE Helpline to increase engagement and foster the global entrepreneurial community.

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Confederation of Indian Industry

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JURY & SPEAKERS

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LIST OF JURY & SPEAKERS

Prof. Y.S. Rajan

Y.S. Rajan has a proven track record of excellence as a Scientist, Technologist, Administrator, Organisation Builder and Leader, Diplomat, Academic, Writer and Poet. He combines a unique ability for original and innovative thinking with strong implementation skills. He has capability to network with multi–disciplinary and multi–cultural groups.

He has made key contributions to space research, technology and applications since 1964 and continues to be an important expert on space matters. As Scientific Secretary, Indian Space Research Organisation (ISRO), he was responsible for a combination of scientific, technical, administrative, planning, policy and international cooperation matters. His contributions in shaping ISRO from its initial experimental phases into a major service delivery organisation have been remarkable. In the process, he has also been a creator of many institutions and sustainable mechanisms between ISRO and its end-users. He has worked with Massachusetts Institute of Technology (MIT), USA and NASA for about three years.

He is also a well recognized authority and thought leader on technology development, business management and society linkages. While holding various positions of responsibility related to science and technology (S&T) between 1988 and 2002, he has shaped key policies and implemented several successful R&D projects with industry participation. He has been responsible for creating a series of documents related to Technology Vision 2020 for India, which culminated in a book on a roadmap for socio-economic development for India called “India Vision 2020”. He has practical ground level experience in developmental issues and has founded and built organizations like Technology Information Forecasting and Assessment Council (TIFAC), which he has led for about two decades. These organizations have helped to bring relevant technologies to improve productivity for the agricultural, manufacturing and service sectors.

Umesh Upadhyay

President News, Network18

Umesh Upadhyay is a senior journalist, academician and communication strategist. Having worked for over two decades in the media, healthcare and academic domains his forte lies in effective communications using the mass media to reach out to people. He has simultaneously worked in the social field and has a sensitivity to understand issues and concerns on a larger plane. As a regular commentator on public issues he has an uncanny sense of understanding and analysing political, economic and social issues from a holistic perspective.

Academically he has done his Masters and M Phil in International Relations from Jawaharlal Nehru University (JNU). He has done his graduation from the University of Delhi. As a rank holder in the graduation he was chosen to be a member of the Academic Council of the University as a student. He has done professional TV courses from FTII, Pune, Asian Institute for Broadcasting Development (Kula Lumpur), BSky B (London), Thames Studios (UK) and CPC, Delhi among others.

He has had experience of working with Delhi University, Press Trust of India (PTI), Doordarshan, Zee News, SAB TV, Home TV, Rockland Hospitals, Disha Education Society Reliance Industries Limited and Network18.
Starting his early career as a lecturer in Delhi University, he shifted to media and has held senior most positions in various News channels including Channel Head, Editor, Executive Producer etc. He has conceived, produced and presented many pioneering programmes during his career in media.

He has reported many events live on TV and continues to write. He, as a reporter, has visited and covered many trouble torn spots in India including Jammu & Kashmir, Punjab, Assam and Kargil. He has also handled several international assignments.

He did not remain limited to content making alone but also conceived, planned launched and successfully managed media and other projects during his career. It includes Zee News, Janmat and Home TV etc. He was instrumental in converting

Gopichand Katragadda

Chief Technology Officer, Tata Group

Gopichand Katragadda:

Dr. Gopichand Katragadda, also known as Gopi, has been the Group Chief Technology Officer of Tata Sons Limited since August 3, 2014. Dr. Katragadda is responsible for technology at the group level and share his expertise in managing R&D operations, leveraging cross-company synergies, creating technology strategies for white spaces, and acting as an evangelist for innovation across group companies. He served as Chief Technology Officer of GE India Services Holding Limited until July 1, 2014. Dr. Katragadda served as Managing Director of GE India Technology Centre Private Limited from 2012 to July 2014. Dr. Katragadda served as Chief Technology Officer of GE India. He is based at the John F Welch Technology Center, Bangalore. He was with GE for 12 years. He held various leadership roles within GE including India Leadership for Energy Engineering and GE Global Research. Before joining GE, he worked with Karta Technologies, San Antonio, Texas, as Vice President of Research and Development and also Adjunct Professor at the University of Texas and on the board of directors for Texas Public Radio. He has authored a book on innovation (published by Wiley), over 30 publications, five patents, several invited presentations, and citations of his research work. He is a member of several professional societies and on the Innovation Task Force for the Confederation of Indian Industries and the India Innovation Council. He has specialised in electromagnetic sensors, with five patents in this area. Dr. Katragadda holds a BS degree in Electronics Engineering from Bangalore University and MS, PhD degrees in Electrical Engineering from the Iowa State University

Vinay Sahasrabuddhe

National Vice President, Bharatiya Janata Party

Vinay Sahasrabuddhe is the National Vice President of the Bharatiya Janata Party (BJP). An activist-researcher at the core, Dr. Sahasrabuddhe has been heading Rambhau Mhalgi Prabodhini (RMP), Mumbai for the last 26 years as its Director General. RMP is South Asia's only training and research academy for elected representatives and voluntary social workers. For over a decade, he was in charge of the National Training Cell of the Bharatiya Janata Party (BJP). He also headed BJP's Good Governance cell for a while.

As a student activist, he had offered satyagraha and was behind bars for over a month during the Emergency of 1975. He was also national secretary of the Akhil Bharatiya Vidyarthi Parsihad (ABVP) in his student days. He has also worked as member of the Senate and Management Council of the University of Mumbai for several years. For several years he was a member of the Board of Governors of YASHADA, academy of development administration, Pune and currently holding a similar position at the Sardar Patel Institute of Public Administration (SPIPA). Between 2002-2004, he was Chairman of the western regional committee of CAPART (rural technology council) of the Govt. of India. In 2013, he was elected as Vice-President of the Asiatic Society of Mumbai, a 208 year old prestigious society. A freelance journalist since his college days, Sahasrabuddhe is a regular contributor to several Marathi and English language dailies and weeklies and a blogger as well. The University of Mumbai awarded him a doctorate in Politics in 2009 for his thesis 'Political Parties as Victims of Populism and Electoral Compulsions: A Quest for systemic Solutions.' His research was later published in the form of a book, entitled 'Beyond a Billion Ballots.'

Twice fellow of Salzburg Seminar, Dr. Sahasrabuddhe has traveled abroad extensively. He has visited more than 15 countries for seminars and conferences. He has half a dozen Marathi and English books to his credit, two of them award-winning. His areas of interest and study include democratic polity and governance, national integration and empowerment of the voluntary sector.

Pratap Pawar

Chairman, Sakal Media Group

Apart from being the Managing Trustee of Sakal Papers Ltd., a renowned Marathi newspaper in Maharashtra and Goa with several popular supplements, Mr. Pawar, a Graduate in Engineering from the prestigious Birla Institute of Technology and Science, Pilani is also affiliated to various prestigious Government and autonomous institutions. Notable among these are his association as a member on the Board of the Press Council of India, Senate, University of Pune, Governing Council of Maharashtra State Board of Technical Education, Mumbai and first Board of Governors, Government College of Engineering, Pune. With a strong social commitment, Mr. Pawar is also actively associated with various social and educational institutions in Pune such as Dr. Nanasaheb Parulekar Sakal Charity Trust, Pune, Sakal India Foundation, Sakal Relief Fund, Students Welfare Association, Pune, Poona School and Home for Blind for Girls and Boys, Kirloskar Foundation, Balgram - SOS Children's village, Pune Balkalyan Sanstha Nirdhar Trust, Pariwar Mangal Society with the mission of ensuring social justice and better opportunities for the downtrodden and weaker sections of the society. He is also the Trustee of the Maharashtra Medical Foundation's Joshi Hospital and the Lokmanya Hospital, Chinchwad Pune.

He was appointed as a member of the Executive Committee of the World Association of Newspapers (WAN), Paris in January 2007. Since June 2007, he has been appointed as the Vice President of the Board of Directors of this prestigious association. He is on the Board of Trustees of Aluminium Casters'Association of India since July 2007. He is also the Director of BharatForge Ltd.

Kirloskar Oil Engines Ltd., Pune and Pan Gulf Group Ltd., U.K, Finolex Cables Ltd. and Force Motors Ltd. Pune.

His earlier affiliations were as President of the Mahratta Chamber of Commerce, Industries and Agriculture, Pune, the first President of the Federation of Chambers and Associations in Maharashtra, President of the Indian Newspaper Society, New Jury & Speakers 14

i3 National Fair 2014Jury & Speakers 14
i3 National Fair 2014

Delhi for the year 2001-2002 and President, Indian Language Newspapers Association 2005-2006.

A recipient of the Honorary Membership Award by the Indian

Arun Jamkar

Vice Chancellor Maharashtra University of Health Science

Dr. Arun Jamkar is the Vice Chancellor of Maharashtra University of Health Sciences. Dr. Arun Jamkar earned his MBBS and MS (General Surgery) from Marathwada University, Aurangabad. He completed his Ph.D. in Surgical Oncology from the University of Pune in 1987. Besides, Dr. Jamkar is a Fellow of International College of Surgeons, Fellow of Minimum Access Surgeons of India and Fellow of Indian Association of Gastrointestinal Endo Surgeons. He has an experience of 30 years in the field of teaching, research and administration.

Arvind Mathur

President, Indian Private Equity & Venture Capital Association (IVCA); Chairman,Private Equity Pro Partners(Non-exec)
Gurgaon, India
Venture Capital & Private Equity

Arvind is a leader in private equity. He has over 25 years global experience in private equity, venturecapital and investments. He led a team of multinational and diverse professionals in managing a portfolio of direct investments and over 30 private equity funds at the Asian Development Bank. He gained exposure to many Asian countries, besides India and China.

At Citi he helped structure and establish a US $ 1 billion private equity fund for a client. His experience spans all stages of private equity including due diligence, valuation, fund formation, mobilizing LP commitments, making drawdowns, identifying and negotiating investments, adding value to funds and portfolio companies and exiting by a variety of methods including strategic sales, sales to other LPs and to other funds.

Arvind is passionate about private equity and has relationships in private equity and banking across the globe and is currently based in India.
His investment banking experience includes M&A, IPOs having concluded, or being involved at various stages, in several transactions at Citi & ADB.
He is a CFA Charterholder, holds an FRM and has attended executive education in private equity and hedge funds at the Harvard Business School. Arvind attended training programs in New York at Goldman Sachs and Citi as well as at the SEC in Washington D.C.

Arvind is frequently invited to speak, or conduct training, in private equity and mergers and acquisitions in Singapore, Hongkong, India, Mauritius & Dubai.

R. Saha

Senior Advisor
Confederation of Indian Industry

R Saha is a Master Degree holder in Aeronautical Engineering from Cranfield University in England and a Bachelor Degree holder in the same subject from IIT Kanpur. He served the Government of India for 35 years different capacities and handling different responsibilities including technology evaluation and assessment, research and development and public policy matters and regulatory functions. In the last 15 years he spearheaded the national efforts in capacity building by creating awareness about IPR in India especially universities through workshops (380), publishing a monthly magazine, writing articles and papers, setting up operational systems at state levels, starting university IPR cells in about 60 universities, conducting one year specialized training programme for women scientists in the area of IPR and helping academic institutions in designing their IPR policies. He evolved an innovative system for protecting university inventions and other original IP ensuring active participation of inventors and attorneys. About 1000 patent applications have been filed after careful patentability analysis.

While in government he was actively engaged in law and policy making in the most crucial times after India signed the WTO agreement. He represented India in discussions at WIPO and other international forums and was involved in negotiating international agreements in the context of scientific research and development. He has been a member of the standing IPR committee of the Confederation of Indian Industries for many years. He was facilitated by CII for his immense contributions in the area of IPR in India. He has been conducting IPR training programmes in India and elsewhere; he recently conducted a one week training programme on IPR for developing countries which was attended by representatives from 28 countries. He is a visiting faculty in many national institutions in India and is currently a Senior Advisor to Confederation of Indian Industry

Robin Aggarwal

Robin Aggarwal is the Chairman of The Millennium School, Mohali. He passed from Boston University with a dual degree in MS (Information Systems)- MBA in year 2003. Robin Aggarwal is active in Yi and was the chairperson for the year 2013-2014. He enjoys travelling and sports

Padmaja Ruparel

President at Indian Angel Network
South Delhi, Delhi, India
Venture Capital & Private Equity

Built India's first and Asia's largest angel investor network - Indian Angel Network (www.indianangelnetwork.com) from a concept to close to 250 investors across Indian and overseas. Built angel investor group frameworks and set industry standards, operations for a funnel of over 350 deals a month, and now a term sheet almost every 3 weeks, and a portfolio of 50 companies, across various sectors and counties like India, Canada, US, France, Sri Lanka, etc. The portfolio companies are now giving exciting returns of 22x over 5 years, 6x over 15 months, leading VCs doing follow on rounds in IAN investee companies.

Architected and established a unique model of a virtual incubator leveraging the business acumen and domain expertise of successful entrepreneurs in 2010. With a fast growing portfolio of over 3 dozen incubatees, companies are now raising seed round with 6-9 months of incubation. A landmark amount of Rs. 10 cr (over $2mn) seed money has been raised by 6 companies in 9 months!

On the jury of several organisations for early stage companies - Lockheed Martin Innovation Program, India's Ministry of Micro, Small & Medium Enterprises Technical Committee, Indo US Science & Technology Forum, etc.

Engaged with Planning Commission for its Committee on Angel and Early Stage Investing, SEBI for SME exchange, etc.

In the Impact investment ecosystem, am engaged with the formation of the Indian Inclusive Innovation Fund, an initiative of the Prime Minister's National Innovation Council. This Fund is led by Sam Pitroda, Chairman of the National Innovation Council, Arun Maira and Saurabh Srivastava, members of NIC. Am also representing IAN on the Asian Venture Philanthropy Network.

Jaiprakash Singh Hasrajani

Commerce graduate, holds Master's Degree in Human Resources.

Jaiprakash is Co-Founder & CEO of ValeurHR, which has various verticals as ValeurHR (leading HR Consulting, Staffing Company,www.valeurhr.com), Taaleem India (an Education Management, leading Skill Development and Capacity Building organisation,www.taaleemindia.com) and Taaleem College of International Studies (TCIS, a Global School of Management &Education ,www.taaleem.edu.in). Jaiprakash leads Business Growth Strategy, Business Development, Client Relationship Management, Finances and Overall Delivery with strong focus on People Management. Jaiprakash has represented India in G20 Young Entrepreneur Summit in Mexico in 2012, Representated India at Commonwealth Asia Alliance of Young Entrepreneurs 2012 Summit in Mumbai, taking up the agenda of Youth Development, Employment, Skill Development and Innovation. Jaiprakash speaks at various forums around India in the areas of HR, Education and Skill Development. He serves as Board of Directors at Rotary International, Chandigarh (India). Jaiprakash has also served as member of committee working under Indian HRD Ministry for framing National Vocational Education Framework for IT& ITES.

He currently serves as Chairman at Yi (Part of CII) Chandigarh (India) Chapter and leading various initiatives around Entrepreneurship Development, Skill Development and Innovation in the region.

Jaiprakash was recently awarded "Asia Pacific International Leadership Award" for his contributions to industry development by Global Achievers Foundation. Also was awarded by University of Pune for his Entrepreneurial Ventures and Jury & Speakers 14
i3 National Fair 2014Jury & Speakers 14
i3 National Fair 2014

contribution to Skill, Employment & Entrepreneurship Development. His company Taaleem India has received numerous awards including prestigious awards from CII for Special Contribution in Education & National Initiatives of CII.

Gireendra Kasmalkar
CEO

Gireendra is a Mechanical engineer from IIT Mumbai (B. Tech. 1987) and University of South Carolina, USA, (M.S. 1989).

Beginning his career with Tata Consultancy Services, he has been an entrepreneur for most of his 25 years in the IT industry. His initial business was in the CAD-CAM space, before starting his independent software testing business.

VeriSoft, one of India's earliest and leading independent testing companies was founded by Gireendra. In July 2008, a majority stake in VeriSoft was acquired by SQS Software Quality Systems AG – a global leader in independent testing. With its headquarter in Germany, SQS has its operations spread out in more than 20 countries and is listed on the London Stock Exchange. In addition to being a Managing Director & CEO of SQS India, Gireendra is also currently in the Cabinet of the SQS Group, on the board of SQS USA and SQS India BFSI Ltd. (erstwhile Thinksoft Global Services Ltd), a listed Indian company.

Gireendra has been a speaker at various international conferences on Software Testing and PLM. He is actively involved in various industry forums, currently as a charter member and Governing Council member of TiE Pune. He is the founder of Software Process Improvement Network (SPIN)-Pune. He was also the Chairman of Computer Society of India (CSI) - Pune chapter and Core group member of the Mahratta Chamber Gaming and Animation Group.

S.R Joshi

S.R Joshi with an illustrious experience of 40 years, graduated as Mechanical Engineer from Shivaji University, Sangli.

He's has been part of 'Kirloskar Group', for 10 years, where he applied his expertise in the area of Quality Management, Vendor Management, Standardization and Quality Improvement projects. Mr Joshi was successful in initiating additional substitution projects at Kirloskar.

Furthermore his experience of 19 years with 'Kalyani Group' has been an extraordinary journey. At Kalyani Group he was responsible for plant management, technology transfer and various collaboration initiatives. In the last 8 years of his tenure, he spearheaded the Business division as Business head.

In the year 2003, he joined 'Persistent Systems Limited'. With Persistent System his involvement and role was spread across diverse sectors such as HR, Legal, Secretarial, Finance, Administration, Facility Projects, IT Infrastructure and IT Management. Mr Joshi always interested in working with diverse segment took care of Environment Management and Sustainability Systems. With his explicit leadership and thought process he wheeled many CSR project for company.

Currently he's working as a Consultant at Persistent Systems Limited.

Mr Joshi is an avid reader and is passionate about resolving issues and challenges for medium and small companies. He being director of 'deAsra', is proactively helping in shaping entrepreneurs.

Abhay Jere

Persistent Labs

Dr. Abhay Jere

With 15+ years of experience in life science and healthcare, Dr. Abhay Jere is head of Persistent Labs, driving multiple cutting edge projects as Principal Investigator in fields such as systems biology and epigenetics. He brings in extensive global research experience in bioinformatics, molecular biology, genomics, cell-biology and protein purification. He completed his Ph.D. from the National AIDS Research Institute (NARI) in Pune and his post-doctoral fellowship at the U.S. National Cancer institute (NCI) at the National Institute of Health (NIH).

Neeraj Kumar Singal

Generation Entrepreneur

Neeraj Kumar Singal is a first generation entrepreneur having built his business around traditional Manufacturing &Trading. Over last 15 year he has created a profitable business in diversified fields like Railways, Defense, Global Trading and Light Engineering Goods. His vision and bonding skills resulted in forging relationships with some Iconic Global companies like Colt Manufacturing LLC, USA, Karl- Walther GMBH, Germany, CNR Datong Electric Locomotive Co. Ltd, China and Bulls Amesys, France amongst others.

Today, SEMCO is single largest company with a market share of 75% in Railway wheel and axle sets.

Under his leadership The Semco Group has developed a corporate culture marked with ethical values and transparent trade practices.

His penchant for successfully trying new ideas has evolved into a passion for finding & funding potential young achievers. He is a widely travelled person and has rich experience of working with people of different culture & nationalities.

Neeraj is a commerce graduate from Hans Raj College, Delhi & pursuing OPM from Harvard Business School.

He is member of Indian Angel Network, FICCI & Young President Organization (YPO) and is actively involved in Angel Investing, Incubating & Mentoring technology driven startups.

T. S. Panwar

Director, climate change and energy programme at WWF-India
South West Delhi, Delhi, India
Environmental Services

Research experience of 26 years on energy-environment issues.

Managerial experience as Director, climate change and energy, WWF-India, and former Director of energy environment policy division at TERI. Supervision of multi-disciplinary team of researchers.

Key areas of work include
Energy-environment policy
Environmental impact assessment/ environmental management plans Air pollution Climate change

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Government of India

Confederation of Indian Industry

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PROJECT SYNOPSIS

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i3 2014 National Fair Project Synopsis

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SUNFLOWER SEEDS SEPARATING MACHINE

GUIDE : V.NANDHIVARMAN HOD : Dr.P.SOMASUNDARAM

Team Members : V.T.Koushic , S.Velmurugan , G.Sridharan

We are deciding to fabricate the project called “SUNFLOWER SEEDS SEPERATING MACHINE”.

The aim of our project is to separate the seeds from sunflowers. The main components required to fabricate the project are drum. Shafts, circle plates, ball bearing, pulley, belt and tray .The principle of this machine is to separate seeds completely from sunflowers by the pressure of rotating circular plate if two circular plate used in machine, one plate is rotated and another plate is fixed.

we put a sunflower in between the circle plating plate is moved to compress the plate and seed separate way to keep it, and the dust particles are another way separated, finally the seeds are collected at the bottom of the machine, it is mainly useful for agricultural people.

SEMI AUTOMATED TWIN BLADE RUBBER TAPPING MACHINE

RM. Arunachalam, G. Dhashwanth Srinivas
Dr. P.Rajesh Kanna

At present there are many knifes are available in the market for this problem but they are not full filling the needs. A labour has to apply force continuously on each tree to get the desired path. This makes the labours tired and they could not do this job continuously for nearly 300 to 350 trees in a short duration at early morning every day. This leads shortage in labour for rubber tapping in India. Hence a motorized concept of tapping knife is needed to reduce their effort. We are planning to reduce the labour cost and also the efforts that he has to put while tapping.

Every day the harvesters are facing shortage of labour for rubber tapping. Because their working time is too early in the morning and it is hectic job. We designed a new motorized concept to address the requirement of the harvesters. The proposed machine consists of an electric motor, rotary cutter and protecting shield. The proposed machine size is compact, easily to carry. The machine consists of 12V & 7 amps-Electric motor, MS-Shield, Iron steel-Cutter and 12V & 7amps-Rechargeable battery.

In this machine, the shield protects the stem and bark of the tree. The tail is designed to rest on the previously bark in which the cut was made. The cutter blades face the old bark . The machine is held by the handle provided on the body. For initial tapping, the machine is positioned in an inclined manner and it is guided on the bark in terms of a curved profile. And the bark that has been removed is stores inside the shield where it is in a curved structure and then finally this can be removed. The total cost of the machine is around Rs.3000/-.

MULTIPURPOSE FOOD PROCESSING MACHINE

Innovator - Dharambir Kamboj
Team Member- Prince, Ravi

Introduction of Machine

The multipurpose processing machine developed by Dharamveer is a device capable of pulverizing, oil and essence extraction from various herbs and farm produce. The device is designed in such a way that it can also be used as a big pressure cooker, a homogenizer or a sterilizer. Using this device, the innovator has also devised a method of extracting juices, and essence from Aloe Vera, Amla, and other herbs and their further processing for producing various products. He is effectively using it for many years in producing various health care and cosmetic products.

Special features of the machines

Multi functional machine for producing products. Light in weight and portable to job sites for reducing the transportation of the raw material from fields to processing site.

Machine has the capacity to process around 200 kegs of herbal products, fruits or so in an hour,Low cost of production enabling common people to have reach of herbal products in the form of gel juice, essence, etc

Easy to operate, an illiterate person can run the machine with a little training. Machine is easily affordable by common people.

Machine can able to make KHOYA of milk. Machine can able to make the sweet of caret. Machine is able to boil to rice. This machine is capable to prepare food in bulk.

Machine can make the TOMATO catch-up and TOMATO puree. Machine is capable to make the extract of rose, TURMERIC and any type of herbals

Machine is capable to make the ALOE VERA juice, gel, shampoo, extract etc. Machine is capable to grind the AMLA without breaking its seed, for juice.

A lady crushed Amla Only 8 kg in a day and the same lady can 800 Kg. Amla can crushed. Which give the 50% juice and 50% fog to make the Amla sweets with the help of this machine?

Machine can be used as big COOKER. Machine is capable to produce of Green Mango and Make the AMCHOOR without breaking seed.

It can be make the PULP of RIPE MANGO without breaking the seed. Machine can produce the juice of JAMUN without breaking its seed.

This machine capable to make the juice, extract and also make the pulp of all type of Fruits.

DHOOPIKA: EMPOWERING WOMEN THROUGH SUSTAINABLE DEVELOPMENT

Keshav Gk, Abhishek Rathi, Hare Lal Mahato,
Abhishek Kandoi, Adnan Ahmed Ansari

Our innovation "SHRAVAN" is a fully automatic, independent and highly stable robotic staircase climber incorporating a unique climbing algorithm to climb the steps. It helps the senior citizens climb the steps of Temples, Mosques, Churches, Places Of Worship, Monuments, Residential Apartments, Theatres, Cinema Halls, Sky Walks and Railway Stations without any difficulty.

SHRAVAN's novelty and utility is that it makes the senior citizens independent, helps them in remaining engaged and encourages them to remain connected preventing social isolation.

SHRAVAN's innovation is its evolved climbing algorithm which ensures safety and stability.

The equipment consists of a sliding chair mounted on an undercarriage which is vertically raised and lowered by 4 sets of Legs with wheels independently powered by one of the following mechanisms pantograph or Rack-Pinion or Ball Screw-Nut. The forward drive motion is achieved by 4 pairs of wide, anti-skid roller wheels with integrated brakes. The risers and the treads of the steps are detected by proximity sensors. The feedback from the sensors is given to a controller which processes the information and gives the output to the servo motors. Brakes are always in "ON" mode except when the drive wheels move forward. This ensures a rigid support when the platform rises vertically. The platform always remains horizontal (no tilting) and parallel to the floor, making the user feel safe, stable and comfortable.

Presently, SHRAVAN is modelled with the help of LEGO Construction Blocks and LEGO Mindstorms Controller, Servo Motors and Sensors. The mechanism is tested for its overall dimensional proportions, its working and program algorithm.

Working drawings, Engineering Calculations, Detailed Specifications are in progress. We plan to build a prototype using engineering materials to test under actual operating conditions for safety, stability, consistency, fatigue and endurance

MODIFIED DOUBLE CYLINDER HAND PUMP

Brijesh Verma
Sajan Kumar Sah
Vibhav Kumar Chaubey
Shyam Narayan Gupta

Double Acting Hand pump is an efficient water hand pump. This gives double discharge rate in comparison to normal hand pump. There are two cylinder and piston arrangements which are operated by single hand lever. In each stroke of hand lever, one cylinder sucks water from the bore while other cylinder gives water to the outlet. Therefore in every stroke, there is one working and hence it makes discharge rate double in comparison to normal water hand pump.

Hence single operator is going to have double discharge from single suction pipe or single bore.

FUNDASLATE CATEGORY : EDUCATION

Ravinder Pal Singh Kalra
Ranjod Kalra

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YELO SOLAR POWERED BAG & DESK

Saurabh Bag
Manish Mathur
Anurag Saini
Alok Kumar

Prayas Innovation is an international social enterprise that addresses the challenges faced by society in areas of Energy, Education and Health. The company aims to improve the quality of life of people in third world countries thus forming a healthier, safer and civilized society. With a vision to deliver and implement need based, low cost innovative products, every day at Prayas is an attempt to improve the quality of life through intelligent design.

Students in third world countries lack access to basic educational infrastructure, as basic as school bag, a desk, a light source to study at night. YELO a revolutionary School Bag cum Desk helps students to meet their basic education needs.

YELO, an intelligently designed school bag, helps children carry their books, belonging, irrespective of the weather conditions. The same bag with a single fold technique smartly transforms into a school desk. The desk offers and angle of 30-35 degrees for students to write and read, thus ensuring they maintain an ergonomic posture while studying.

1 in 3 people across the globe lack access to electricity. Remote areas face heavy power cuts, thereby making it difficult for children to study at night. YELO is built with a LED light source, to delivering light for more than 6-8 hours, thus empowering students and rural household to carry out their evening chores.

YELO comes with a handy solar kit that powers the LED light. The rechargeable battery in solar kit can be charged through solar energy as well as supports AC charging. Solar kit can also be used for other application like charging mobile phones in case of emergency.

ELECTRO BIRCKS – ELECTRONICS IS FUN

Shashwat Rata, Aman Rajvanshi, Ranvir Saini

Electro Bricks is a Fun Electronics Blocks for new bees looking to get started with Electronics. Similar to the popular construction blocks format, the bricks are pluggable with each other. You can create complex circuits using very simple bricks. You do not need any programming or soldering skills to get started with electro bricks. This makes it ideal for young kids, hobbyists and artists.

Electro Bricks is first of its kind product which makes learning electronics fun and easy. It can be used by young school going kids to develop toys, by teachers to explain and demonstrate science concepts, by engineering students for their projects and research activities.

Electro Bricks are electronic analog circuits developed on printed circuit boards suing SMD components. No microcontrollers are being used.

Electro Bricks are divided into six basic categories. Each category has its own unique colour, which makes it easier to understand and manipulate. Each category has different type of bricks, each with its unique functionality.

1. Power Bricks (Red Color)
2. Input Bricks (Orange Color)
3. Function Bricks (Blue Color)
4. Output Bricks (Yellow Color)
5. Logic Bricks (Green Color)
6. Connector Bricks (Pink Color)

Electro Bricks are made available in the form of Kits.

ROAD BASED ENERGY GENERATION SYSTEM

Srinivas H/ Sasiprabha H

About Product

Economical ultra compact device which produces off grid renewable energy from vehicular movement

Problem Statement

- Dearth of Electrical energy in the country
- Requires heavy investments for conventional renewable energy sources
- Global warming
- It is estimated that to generate 2460 KWH of energy, 1 ton of coal is burnt which results in 2.86 tons of CO_2 emissions
- Solution
- Road-based energy harvesting mechanism
- Utilize roads to convert to a significant and viable energy source
- No environmental impact

Features

- Renewable Energy
- Efficient
- Global implementation
- Low cost & simple
- Easily Scalable
- Less Parts
- Spring less mechanism, means less maintenance
- Turbines work above the ground
- Fits to the side of the road
- No impact on moving vehicles

Advantages

- No Land acquisitions
- Occupies less space
- Uses existing infrastructure
- Provides off grid facility in multiple locations
- Market Research

As per surveys more than 25000 vehicles pass on highways per day

- Tremendous scope for high level of renewable energy generation by capturing this untapped source. Ever increasing requirement for electricity

RVCR MULTI- FUEL ENGINE TECHNOLOGY

Ajeet Kamath

RVCR Multi-Fuel I.C.Engine is based on an Indian Invention in the field of Kinematics that combines the characteristic requirements of petrol engine and diesel engine into one and can run on both fuels. RVCR engines allows switching of fuels during operation, from Petrol to diesel to LPG etc and even to green fuels like hydrogen or Bio-fuels, hence eliminates the need for separate customised engines and accessories for use of different fuels including green fuel.

RVCR provides a technological platform to integrate the use of green fuels with fossil fuel and allows use of locally available fuels in engines for power generation or transport etc in absence of fossil fuel, hence unhooking dependency on fossil fuel source and saving oil importing and logistical costs.

RVCR technology is indigenously developed within the country by 'GYATK RVCR Apparatus Private Limited' and has granted patents in 49 countries worldwide including USA, Japan, India, China.

RVCR is about a simpler and more efficient rotary kinematic mechanism (different than wankel engine mechanism) where two adjacently placed piston vanes of curved geometry encapsulated in a hollow torus chamber, are fitted on two independent coaxial sleeves mounted on a output shaft which is directly turned by piston vanes. The mechanical design is direct, comparatively simple, light, eliminates a significant number of moving parts and is up to 54% smaller than the reciprocating piston IC engines. The mechanism easily attains the VCR which is root to higher efficiency and multi-fuel capability and combines it with the performance gains and downsizing benefits of rotary mechanism.

RVCR is a disruptive technology that improves fuel efficiency with lower emissions, hence reduces overall carbon foot print and has across industry application including Automotive sector products like Cars, HCV, LCV, Mass transport sector, Power Generation, Marine and aviation etc., and special purpose machines.

GENERATING ELECTRICITY FROM PINE NEEDLES

Rajnish Jain

Pine needles that are shed during summer months form a carpet on the forest floor. The forests around these villages rage with fire spread by pine needles, destroying the natural resources. In an average village in Central Himalayan state of Uttarakhand, women from each of the 100 odd families walk 5 miles every day collecting fuel wood, before they can cook meals for their families. The walk is becoming longer each year and access to water, herbs, and timber is also diminishing. These families do not have a permanent source of income and their existence in their villages is at stake.

In the backdrop of this problem, Avani Bio Energy has already developed the solution of employing people to collect pine needles and generate clean electricity from them, addressing the global concern for carbon reduction. ABE has innovated the technology to generate electricity from environmentally harmful biomass – pine needles. ABE sets up small scale village based 120 KW power plants, bundled together to create an impact on employment, bio-diversity and carbon emissions. These grid connected power plant sell electricity to the local power utility. Local people, who are employed to collect pine needles are remunerated both in the form of cash and cooking charcoal. The first 120 KW power plant set up in Kumaon, Uttarakhand is operational and feeding power into the grid.

ENERGY SAVING CUM AWARENESS USING ENERGY EFFICIENT ELECTRICITY (E3) METER.

Dr Santosh Dalvi, Dr. Ashok Bhonsale; Mr. Ravindra Datar;

Reducing energy demand in the domestic segment is an important problem worldwide. This study focused on the awareness of residents on energy conservation and on the potential of reducing energy demand through energy-saving activities.

The following observations were noted down during the experiment of smart meter in 10 houses of Mumbai city.

(1) Its installation led to a reduction in power consumption,

(2) a change in energy-saving behaviours of the household members such as the reduction of standby power and a better control of appliance operation, and

(3) energy-conservation awareness affected not only the power consumption of the appliances explicitly shown on the display monitor but also other household

appliances.

(4) Development of sustainable environmental system.

VARUN IIIRD

Narayan Bhardwaj
Balram Bhardwaj

It is an invention of kinetic hydro, capable to harness energy form almost every type of water body that have flowing water without developing any mega-structure & it can revolutionize the world of non conventional energy generation.

System is directly driven by kinetic energy, present abundantly in every flowing artificial/ natural water body. Design is quite simple in nature, easy to manufacture, less expensive & economic, can be built anywhere with efficiency

It is a conical shaped turbine, attached in such a way so that it gives a pointed face in one side and a broad fin end in another side and all the fins are curved in shape and attached to the turbine base in a manner so that it will provide a perfect angular shape in 30 to 40 degree. Turbine fins have deep invert fold to give space and convert maximum strike power of flowing water into torque. Any number of turbines could be installed inside a floating case, made up of any material which can float over the surface of water. Inside the floating case these turbines can be installed to give individual RPM along with torque using gear mechanism or can provide joint RPM along with sum of all the torque at a single output point by using chain and sprocket mechanism. The spiral turbine has very sharp edge & thread like shape to cut the water surface easily & which help the turbine blades to emerge fully inside flowing water & with the flow of water this spiral screw like structure rotates the turbine base when water strike at the edge of the turbine. Its screw like structure which allow it to cut the water flow & without disturbing the regular flow of water generate rotations with torque is the most advantageous

BANANA LEAF TECHNOLOGY - A NOVEL ECO-FRIENDLY TECHNOLOGY TO KEEP LEAVES GREEN FOR 1 YEAR WITHOUT ANY CHEMICALS TO REPLACE PLASTIC

Tenith Adithyaa

Naturally, Leaves don't stay long. When we pluck out leaves from plant it dries out in 3 days & generally thrown away as waste. There was no technology to preserve Leaves without chemicals - vain of other skilled artisans and plastic products harm our environment. My lust to make a perfect replacement for plastic & paper resulted in this research.

This technology preserves the leaves without using any chemical for 1 year with green color and 3 years without the color. This technology which patent-pending increases Crushability, durability, Stretchability, Resistant to extreme Temperature, creates Banana leaf pathogenic free, convenient to make any utensils. By preserving leafs I manufactured chemical free Eco friendly and biodegradable plates, containers, wraps, cups, bags thus we can replace similar products made out of plastic & paper which can reduce up to 59 % of plastic, 18 % of paper products.

These products were tested for its physical & chemical properties which showed similar results like commercial available products. My technology has 7 physical processes which I invented after 6 years of research makes leaves to stay long & gives Amazing characters & properties which have no substitutions.

I received four international, 6 national and 8 state awards for this technology. My research gives solution to a long standing problem & overcomes a prejudgment that leaves cannot be preserved without chemicals. This technology creates novel material from leaves from which large product such as table can be made like plastics. This can be a perfect writing medium. Products are 66 % cheaper than commercial available products; Waste generated is consumable by animals & annually it will save 30 million trees, 2 million animals, 30 billion tons of green house gases and .2 million m3 of land. This technology is capable of solving 19 challenging environment problems.

"RECYCLED COMPOSITE MATERIAL MADE FROM NON-RECYCLABLE MULTI-LAYER FILM PLASTIC PACKAGING WASTE"

Hetal K Vaishnav
Ankur K Vaishnav

Our project aims to convert typically non-recyclable multilayered film plastic packaging waste via appropriate heat treatment into a useful composite material.

Plastic packaging made up of multilayer films (e.g. chips packets) is usually not recycled. Such multilayers are made for example from metalized polymers or combinations of different polymers. While these materials can be recycled individually, but the multilayered packaging wastes are not normally recycled as separation of components is neither easy nor economical.

Our recycling process is novel as it does not require separation of multilayer film of plastic making it economic and time saving. Further, the recycling process is simple, and does not require additional chemicals, binder or solvents.

This process starts from collection of such plastic waste, removing dust and cutting it into small pieces. Then after, these pieces are converted into composite powder using appropriate heat treatment.

This composite powder is suitable for further use via extrusion moulding, injection moulding, or compression moulding for making various articles for different applications. The sheets made from this material were tested and found to have negligible water absorption. By adding various pigments different colours were obtained. This composite material also possesses very good properties like nail holding, screw holding and can easily be fabricated into any desired shape. Standardized laboratory tests carried out by external testing laboratories show that density, auto ignition temperature, water absorption etc. of this material is similar or better than that of plywood/MDF, thus making this recycled composite a novel substitute for plywood/MDF in many applications.

ECOMAPPERS

Dhiraj Gehlot
Amit Yadav
Jay Visariya
Gaurav Gandhi

Our project is related to pollution mapping and effective solutions for the same. We have designed a pollution mapping kit. We display data of parameters like CO, NO2, dust, noise, Temperature and humidity, real-time on www.ecomappers.com.

The kit is so well designed that it can be mounted above the street light, traffic light, in the society and/or in home for personal use. The kit collects the data from the sensors and uploads the values on Google maps in real time. Anyone can visualize real time readings of the kit installed in vicinity. Every area is rated on scale of 10 on basis of data and standards defined by pollution control board. We can compare two different areas on basis of data collected, say pollution levels of Mumbai and New York.

The air we breathe contains different harmful gases, which causes many respiratory and lung problems which people encounter every day. To overcome this we have come up with amazing solutions like meshed window nets to purify air, fresh air mask, vertical vegetation and few similar concepts. We would implement the above tasks by participatory detection of pollution and collaboration with government and NGO's who are working for the same cause.

Along with mapping we are also providing solutions for reducing pollution levels. We are gathering details of plants which are more helpful in clearing dust and pollution from the air. We will then come out with the algorithm to suggest the number of trees that need to be planted to keep the pollution level to a minimum.

PROJECT PRAJWAL

Rajat Mittal , Shivinder Singh Chandok,
Rajat Gupta ,Harsh Singh , Siddharth Gupta

Prajwal means to illuminate and our project aims to illuminate the lives of the target community by addressing to the socio-economic and environmental problems. In the absence of any formal, scientific electronic recycling and repair centre in the country, our project strives to establish a scientific electronic recycle and repair system for faulty and spent Cfl's The system allows our unprivileged counterparts.

(We call them micro electricians) to be trained in the skill of repairing faulty bulbs, Locally carry out the repair, selling them into the market and build a sustainable business. Our Cfl repairing technology is one of its own kinds with its patent underway. Faulty bulbs, repairing equipment and knowledge resources are distributed on credit, as a form of micro finance to locals who can set up their own CFL repairing cum training business, allowing them to earn a sustainable income.

Post the training; we assist our micro-electricians in setting up their own entrepreneurial ventures.

We plan to setup a co-operative with our micro electricians our major stakeholders.

SMART WHEELCHAIR

Ankit Thakker, Parth Pathak, Hardik Meisheri, Neeraj Patel

Smart wheelchair is a battery operated wheelchair that can be controlled by multiple ways such as neck movement, vocal commands, joystick and also manually by caretaker. The idea behind multiple control is to make it easily operated by differently abled people, who are even not able to use their hand.

For neck movement control, we have designed a device, which can be worn on head. Wheelchair can be controlled by tilting the neck in the direction person wants to go. We have also incorporated smart speech recognition to accept vocal commands in any spoken language.

Other major focus is on cost. We have designed total electronic control unit from scratch to minimize the cost of production.

To minimize maintenance, we have designed various protection circuits. Major protection includes temperature protection, low voltage protection, over current protection and overweight protection. We have also designed cooling system.

Currently, Indian wheelchair market is dominated by wholesalers, and Chinese products are dominating the space. Thus, our motorised wheelchair demand is majorly fulfilled by import, which of course is an expensive option.

With our design, we can achieve up to 50% cost reduction, which can make many more lives independent and confident. We can reduce import by manufacturing it in our own country and also export it.

We are ready with fully functional prototype.

MICROFLUIDIC DEVICE FOR SINGLE CELL ISOLATION AND ANALYSIS

Dr. Ashwin Lal

Shilps Sciences is an early stage company based in Bangalore and provides micro/nano-technology enabled products for single cell analysis. Our flagship product development is an open access microfluidic device that allows generation of nano-liter droplets and single cell capture and analysis, while maintaining single cell integrity. We use novel microfluidics where two microfluidic chips are slipped over each other to transfer micro-droplets from one chip to the other. Once transferred, our arrangement ensures that droplets get trapped in an array of micro-wells. The micro-droplets carrying micro to nano liters of fluid are incubation chambers where the cells may be observed in real time. Our multi-chip arrangement also allows the possibility of bringing micro-injection to pass (or aspirate) fluid to the micro-droplets. The microfluidic chip fits in a table top instrument (under development) that provides handling, fluid control and optical readout.

Our single cell technology is suited for monitoring assays with implications in cancer immunotherapies and regenerative medicine. The advantages we offer are quantitative analysis, single cell sensitivity, time evolution studies and cell selection. Applications are also there in cancer antibody production and rare cell diagnostics. Cancer is the biggest driver because of cell heterogeneity in tumors. Identification and isolation of cells with metastatic potential is necessary for diagnostics and drug discovery. Drug discovery, characterization and diagnostics space for cancer is a huge market.

Shilps Sciences was founded in Dec. 2013 and has built a team of engineers and advisors.

NON INVASIVE, PORTABLE, VEIN LOCATOR DEVICE

Priyank Saxena
Mayank Saxena
Saurabh Gupta

Venous puncturing is one of the most widely used techniques in the medical field and is used for various applications. When medics are treating trauma patients, every second counts. Yet bruises, burns and other physical conditions often make it difficult to locate veins.

The ability to locate a healthy blood vein with a high confidence is very helpful for a Doctor. The failure to do so manifests in many problems:

- Patient Discomfort
- Loss of critical time in administering critical life-saving drugs
- Loss of productivity for the medical staff, a scarce resource; which in turn increases the overall cost of treatment
- Increased chances of infection due to multiple puncturing
- Double puncturing may actually render the site useless
- Wrong needle size may burst the vessel rendering the site useless

The problem is so prevalent that every second child and every fourth healthy adult, who goes through a medical procedure, requires at least a second attempt to locate a useful vein. At an estimated 2 Billion vein access in India every year, it puts a humongous number of 100 million unnecessary punctures every year across India.

Vphore is trying to solve this problem with a low-cost, portable, diagnostic device. The device is based on an indigenously developed technology which non-invasively detects and localizes blood veins. It helps the Doctors/Nurses by showing a vein map of the patient. Having access to a vein map of the patient the Doctor will be able to make an informed decision and in a timely fashion. Thus they will be able to provide a better quality of healthcare.

EPIMETRICS - A REAL TIME EPIDEMIC MONITORING PLATFORM USING ANALYTICS

Pratik Khandagale
Krishna Kshatriya
Sanket Chandak
Shubham Amrutkar

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SALINE BOTTLE LEVEL INDICATOR

R.N. Ramprasath , B. Arun prasath , R. Athava moorthy
Guide : Mr.A.Mothilal.,ME.

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TALK – An Innovative AAC Device to Convert Breath into Speech for the Disabled

Arsh Shah Dilbagi

People suffering from Developmental-Disabilities like Locked-In Syndrome (LIS), Amyotrophic Lateral Sclerosis (ALS), Tetraplegia, Parkinson's disease etc. are almost entirely paralyzed and this disables them to communicate in any way except using an Augmentative and Alternative Communication (AAC) device. Estimates show that approximately 1.4% of world population suffers from such disorders which are more than the entire population of Germany. The Life Expectancy of such people is estimated at 20 years below average, mainly because of lack of expression. Current AAC Devices cost thousands of dollars and are slow, bulky, non- portable and have to be customized. I set out on a mission to find a better solution - An AAC device which is affordable, faster, portable and generic.

TALK employs an innovative technology, requiring a person to be able to give two distinguishable exhales (by varying intensity/time) to be converted into electrical signals using MEMS Microphone. The signals are processed by a microprocessor and labeled as 'Dots' - for Short Exhales and 'Dashes' - for Longer Exhales. These 'Dots' and 'Dashes' are further interpreted as Morse Code, converted to words/sentences and synthesized. TALK features two modes - one to communicate in English supporting 9 different voices (male/female) suiting to different age groups and other to give specific commands/phrases. In communication mode, with embedded feature of encoding facility, user can communicate frequently used phrases by just dictating a few words.
TALK has made two major breakthroughs by increasing speaking rate and becoming the world's most affordable AAC device. I got predicted results by testing the device with a person suffering from SEM and Parkinson's disease. In future, plan is to add auto-predictions to my Morse Computing-Engine and integrate TALK with modern technology like smart phones to 'Make the World a Better Place to Live for People with Developmental-Disabilities and Speech Impairments'.

"SANKET- SINGLE POINT OF CARE HEALTH PLATFORM"

Rahul Rastogi, Neha Rastogi

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PLASMA EXPRESSOR SEMIAUTOMATIC TOP & BOTTOM

S M Mathur* & Omprakash Beniwal**
*Professor & Coordinator (TOCIC), College of Technology and Engg. Udaipur
**Technical supervisor, Blood Bank, RNT Medical College, Udaipur

Plasma expressor Semi automatic top and bottom is a mechanical device for separating plasma and buffy coat removed RBCs. It exerts uniform pressure on the blood bags during the separation of blood components. The purpose of this innovation is to generate Leuko Reduced Red Blood Cells at blood banks to reduce the adverse blood transfusion reactions. It will be an alternative to commercially available imported automated plasma expressor top and bottom. They are available only at tertiary level Medical Colleges associated with Blood Banks because of high initial cost and it requires trained man power. The proposed instrument is inexpensive, easy to operate and can be used in ground level Blood Banks. Thalassaemic patient will get leuco-reduced safe blood for frequent transfusions at their nearby Blood Bank.

The main components of the machine are Hydraulic Pump, Pressure lock switch, Pressure Plate, An Acrylic Plate, DC Motor with gear box, Power switch and Expressor body. Centrifuged blood bag is fastened on the hanger provided at the top and pressure plate is locked . Hydraulic pump exerts a uniform pressure on the blood bags and the blood components are collected in top and bottom bags. A flow control switch is also provided to control the flow of blood.

The first model of the machine was tested by Terumo Penpol Ltd (TPL) and HLL life care Limited (HLL), Trivandrum; supported by the TIFAC, New Delhi. The machine was refined as per the s suggestions and again tested at Jaipur and Udaipur Medical Colleges. Machine was shown to the Additional Secretary of Health Ministry and he asked ICMR, New Delhi for its comments. A presentation was made to ICMR and everyone was very impressed for a cheap solution . ICMR has asked AIIMS, Red Cross New Delhi, and PGI, Chandigarh to evaluate the machine. The expenditure for fabrication of three more machines will be borne by DSIR New Delhi and the expenditure against the performance evaluation will be born by the ICMR, New Delhi. Commercialization of this machine will be a boon in the field of Transfusion Medicine

FLIP

Bhairav Shankar, Anirban Dasgupta, Apoorva Bedekar

An ear-worn health tracking device which locks itself into position once worn, FLIP tirelessly records heart rate, counts steps, watches posture. Accelerometry and Photo Plythesomgraphy (PPG) techniques are used to measure steps, posture and heart rate respectively. The PPG sensor is designed in a circular shape exclusively by us. The device connects to an unique mobile application using Bluetooth Low Energy (BLE 4.0) technology, where the measured values are displayed and logged in the simplest way possible. Moreover, it recommends a personalized diet and exercise routine based on a person's BMI, Body Fat % and Body Type. A social gaming aspect is built in to the application to motivate and engage a person to FLIP into healthiness. Flip combines superiority in both form and function. It's the smallest health tracker ever made. It can also be accessorized to make a fashion statement, every time it's worn on the ear and is almost hidden away. (Ref: http://www.flipwear.in/)

MOBILE PHONE BASED AUDIOMETRIC TEST SYSTEM

Dr. Omana Mammen
V.Vijayan Nair
Sujith Kumar G S

Our innovation "SHRAVAN" is a fully automatic, independent and highly stable robotic staircase climber incorporating a unique climbing algorithm to climb the steps. It helps the senior citizens climb the steps of Temples, Mosques, Churches, Places Of Worship, Monuments, Residential Apartments, Theatres, Cinema Halls, Sky Walks and Railway Stations without any difficulty.

SHRAVAN's novelty and utility is that it makes the senior citizens independent, helps them in remaining engaged and encourages them to remain connected preventing social isolation.

SHRAVAN's innovation is its evolved climbing algorithm which ensures safety and stability.

The equipment consists of a sliding chair mounted on an undercarriage which is vertically raised and lowered by 4 sets of Legs with wheels independently powered by one of the following mechanisms pantograph or Rack-Pinion or Ball Screw-Nut. The forward drive motion is achieved by 4 pairs of wide, anti-skid roller wheels with integrated brakes. The risers and the treads of the steps are detected by proximity sensors. The feedback from the sensors is given to a controller which processes the information and gives the output to the servo motors. Brakes are always in "ON" mode except when the drive wheels move forward. This ensures a rigid support when the platform rises vertically. The platform always remains horizontal (no tilting) and parallel to the floor, making the user feel safe, stable and comfortable.

Presently, SHRAVAN is modelled with the help of LEGO Construction Blocks and LEGO Mindstorms Controller, Servo Motors and Sensors. The mechanism is tested for its overall dimensional proportions, its working and program algorithm.

Working drawings, Engineering Calculations, Detailed Specifications are in progress. We plan to build a prototype using engineering materials to test under actual operating conditions for safety, stability, consistency, fatigue and endurance

SAMAY-SANCHARAK: A DIGITAL BRAILLE ENABLED WRIST WATCH AND CELL PHONE FOR BLINDS

Hitarth Narsi Patel
Prof. Bharati Singh

Tremendous growth in digital world has changed human lives today. More and more efficient and effective digital applications initiatives taken by government across globe will make great impact on next generation with experiencing more and more digitization. Current use of the Mobile phones along with novel wearable devises today have demonstrated example of the same. There is a great need to extend various features provided by cell phones and other digital devices for blind persons. To achieve this challenging task we, in this innovative work, propose novel mobile cell phone integrated with wearable watch design which shall act as essential handled devices for blinds that can be used for managing call, SMS, etc. effectively. Proposed SANCHARAK (A Cell phone for blind) and wearable device SAMAY (The Smart Braille enabled wrist watch for blind) are developed after rigorous survey followed by feedback and requirements from large number of blind organizations and are demonstrated with use of buzzer, QWERTY keyboard, ICE calling, alarm facility, GPS location Tracking, battery level indication, network level indication etc. with Braille language support. In addition to regular functions of watch, SMS, Call and other Notifications being displayed on SAMAY with integration of novel technology of SANCHARAK shall make visually impaired person work more efficiently, since both devices communicates with each other remotely and are implemented after incorporating continuous feedback. We strongly believe that use of these smart features will contribute at large in increasing exponentially work-efficiency and help to society at large. Preliminary results are very much encouraging and highly appreciated by intellectuals, various agencies, NGOs, research community, study groups, and prospective users.

SIMULATION GAMES FOR LIVELIHOOD TRAINING, AWARENESS, SENSITIZATION & IMPACT

Dr. Parag Mankeekar & Neeti Solutions team

Serious games are simulations of real-world events or processes designed for the purpose of solving a problem. Although serious games can be entertaining, their main purpose is to train or educate users. Serious games are games with different social purposes. A Serious Game may be defined as a mental contest, played with a computer in accordance with specific rules that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives.

Neeti's illustrious game development portfolio includes 'Real Lives'- a unique, interactive Life Simulation Game that enables user to live a billion lives in any country in the world. Through statistically accurate events, Real Lives brings to life different cultures, human geography, political systems, economic opportunities, personal decisions, health issues, family issues, schooling, jobs, religions, geography, war, peace, and more! Educational games are a great way to make learning more exciting, and simulation games are best of all, putting you in control of the learning experience.

With a vision to achieve synergy between technology and development Neeti Solutions delivers solutions that will have a sustained positive impact on human life. Neeti is currently involved in developing games for more demanding sectors like Livelihood. Neeti created ChakraView game (simulating farmer suicides); Snakes and Ladders game for SHG- Initiation, SHG- Stabilization, SHG-Management and Introduction to Livelihoods.

Neeti has demonstrated unique skills and expertise in the area of Educational and Life Simulation games. A number of Social Foundations and NGOs have partnered with Neeti to seek advantage of latest technology and game design skills. Neeti has given them services for Game development, Interactive and Game-based E-Learning Course development, Field research or Case studies converted to Graphical stories and Videos, Web-based software development and support, etc. The list of existing and potential partners includes esteemed organizations like e-Kutir, Chaitanya, IFMR, PRADAN, SRIJAN, IRMA & Sir Dorabjee Tata Trust.

NIMBLE, A HIGHLY ACCURATE GESTURE CONTROL RING SHAPED DEVICE

Ayush Agrawal; Abhishek Sharma;Harshit Shrivastava; Vivek Kumar

Nimble is a gesture control device that fits comfortably on the wearer's fingertips. This gesture control technology turns the 15 feet in front of any screen into a highly interactive control area, in which your fingers can be used to magically control a screen, presentation or game. Sub-millimeter accuracy paired with incredibly low latency makes Nimble the ideal gesture control system.

SUSTAINABLE TRANSFORMATION OF CONSTRUCTION WASTE INTO HOUSING AND INFRASTRUCTURE

Rohit Sadaphal, Varsha Arora & Kavita Chaudhary

India generates 14 million tonne of construction waste. Management of such high volumes of waste puts enormous pressure on the solid waste management system.

Sustainable transformation of construction waste deals with processing construction & demolition waste and utilizing recycled aggregate along with waste residue ash and flyash for manufacturing precast concrete products. These products are targeted to meet urban infrastructure needs for creating pedestrian path ways, foot paths and road pavers. In affordable housing product segment the targeted precast applications are doors, windows, tiles and lintels. This innovation integrates inclusion of climate resilient product design with pervious structure that allows street storm water to drain in coastal cities that are exposed to urban flooding.

This innovation provides an approach on the possible energy resilient systems that are required to ensure city wide sustainable consumption. It would address some of the core infrastructural choices such as waste management, and urban ecosystem management available for cities at local level that can help them transition to more sustainable versions in future.

AVALANCHE 3D PROTOTYPER (METALLIC)

Jayan Prajapati, Charuvind Atre

3D Printing has been emerged as the next big thing in manufacturing. We are India's first indigenous 3D Printer (Prototyper) manufacturing startup based in Indore, India. We are a team of 2 graduated engineers from IIT Kharagpur started as Avalanche Automation Pvt. Ltd. in 2013.

The 3D printing technology has seen recent developments worldwide in cost optimization and upgrading the quality of output. It is very useful for rapid manufacturing and prototyping. Major applications include in Industrial, Automotive, Construction, Marketing, Education and Design segments.

Our major innovations which make our product unique worldwide are as follows:

1. Rigid Axis movement - World's first All metal 3D printer
2. Zero Temperature Warping (prior art patent search begun):
   In the majority of commercially available 3d printers, problem of temperature warping is common. Since plastic shrinks as the temperature decreases, uneven temperature distribution causes disproportional shrinkage, which changes the part geometry significantly. Our innovation solves the problem easily.
3. Largest Printing space
4. Least manual efforts in set-up
5. Very high precision
6. Modular design for easy part replacement and assembly
7. Modular Nozzle design with a very low drag coefficient:
   Our Nozzle has been carefully designed with an engineering approach, which reduces the friction significantly in the flow of molten plastic. This improves the high speed performance of the 3d printer, with quality intact.
8. Easy operation - User friendly interface
9. Variety of materials can be used
10. Better resolution, optimized speed, position accuracy and deposition for best results.
11. Cost optimization by using Indian materials (95% Indian product)
    With our innovation, we can provide a long life machine for prototyping at a

very fast rate and high precision. Also, we are optimizing cost and making it lower than the worldwide competition by manufacturing in Indore, India. Our prototyper is a modular machine providing easy replacement of parts and less manual efforts. Our large printing space provides larger prototypes to be made for bigger industrial applications. Supporting multi-material will help in better research and design.

AGRI-COPTER

Athul K Shibu
Job V J
Sarath Marson
Arjun A Ajay

Summary
Our idea is to incorporate a quadcopter with a spraying mechanism that can be used to spray SOLID payloads in paddy or other such crops that require solid fertilizers. A quadcopter is a four rotor flying device that can fly at close proximity to ground level. The product can also be used to sow seeds in the cultivating fields. We believe we can bring about a revolutionary change in the mindset of educated youth of India who are not ready to accept agriculture as a profession.

SOCIAL IMPACT
The introduction of Agri-copter can possibly bring out a revolution in the field of paddy or other similarly cultivated products. We have seen how the introduction of Tractors, Harvesters, Tillers, Seeders, and Hay-binders etc has improved the cost-effectiveness of modern day farming practices.

Agri-copter will definitely find a place among them if employed in the right enthusiasm.

Some of the unique impacts that Agri-copter is expected to bring out are:

1. More people from the youth will try to enter agriculture as a profession.
2. The income of the mediocre farmer will definitely increase by many times as much costlier human labourers are not required and only a trained flyer is required.
3. The blue-collared job of farming will change into a white-collar job with the inclusion of such technologies.
4. Healthier farmers as they are less prone to toxic chemicals which include pesticides, fertilisers etc.
5. No human-animal interferences (such as snake bites, rodent infections etc.) as humans are not in the field when the process takes place.
6. The farmer can ensure that the required amount of fertilisers/pesticides/weedicides has reached the required areas.
7. Also, one of the most important effects is that, presently the working time of a farmer is the day-time. With such off-field techniques, the farmer can work during the night time too.

ARMED ANTI INFILTRATION ROBOT BASED ON PERIPHERAL INTERFACE CONTROLLER USING INFRARED RANGING TECHNIQUE WITH SINGLE DISC SYSTEM

Bhagat Singh.T.E

Secured borders-Secured Nation. A country which has its borders made by land faces major security threat from enemy infiltrations. The use of ultra modern techniques like concerting fencing, UAV and advanced imaging devices also fails to reduce the enemy infiltration. This project intends to stop the infiltrators with the help of a simple mechatronic robot. This robot has a sensor shaft mounted with a infrared trans-receiver, placed in a gear disc coupled with dc motor drive scans/surveils the area for infiltrators. If the infrared signal is blocked by any infiltrators, the PIC microcontroller locks the position of the DC motor at the target and simultaneously energizes the solenoid wound on the guns trigger and shoots at the target. After traversing the full surveillance along 1800 the sensor shaft returns again into the chassis (original position). The chassis is buried into the soil behind our LOC which provides visual stealth to the robot.

AUTONOMOUS UNDERWATER VEHICLE

Akshay Raj Dayal
Aniket Ray

Our main goal is to develop an Autonomous Underwater Vehicles for carrying our sub-sea profiling and fully autonomous missions without operator control. We strive to build an industrial grade Vehicle and integrate the most innovative technology that we are developing each day.

The AUV is prepared primarily for research. It can carry out tasks prescribed by the operator. The main applications include water profiling in various shoreline areas across the country as well as mapping the topography of lakes in the country. The vehicle can also provide access to areas underwater where human access is not feasible. Onboard cameras can be used for visual detection of objects of interests. Various manipulators like grabbers and operator arms can be installed on the vehicle to interact with mission specific objects. The main advantage is fully autonomous control which can enable access to areas where human intervention is not feasible. The vehicle can also be operated in ROV mode with the help of a tether line.

We have tested a prototype of the vehicle at NIOT testing facilities. We also presented a talk about our computing algorithms used at ADCPs conference held at NIO, Goa.

SHRAVAN – THE ROBOTIC STAIRCASE CLIMBER FOR SENIOR CITIZENS

TEAM ROBOSAPIENS

1) Aadiv Shah – 15 Years – Std. X
2) Harsh Bhatt – 15 Years – Std. X
3) Sabhya Sehgal – 15 Years – Std. X
4) Rahesh Saraf – 12 Years – Std. Vii
5) Jeet Shah – 15 Years – Std. X
6) Adesh Suri – 14 Years – Std. IX

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Presently, SHRAVAN is modelled with the help of LEGO Construction Blocks and LEGO Mindstorms Controller, Servo Motors and Sensors. The mechanism is tested for its overall dimensional proportions, its working and program algorithm.

Working drawings, Engineering Calculations, Detailed Specifications are in progress. We plan to build a prototype using engineering materials to test under actual operating conditions for safety, stability, consistency, fatigue and endurance performance. Optimisation of available materials and components is being evaluated.

AUTONOMOUS WEATHER MONITORING COPTER

JagadeeshKumar,Satyanarayanan.
J,Sathappan.G,Yeshwanth.N,Sasitharan.A

The autonomous weather monitoring copter is a multi rotor UAV capable of measuring various key atmospheric parameters such as Temperature, pressure,relative humidity, carbon deposits, aerosol percentages and wind direction at various altitudes and locations.

The Weather monitoring copter has the following features:

1) Measures atmospheric data with high resolution at a particular place as well as user defined positions
2) Reusable and hence the only cost is the initial product manufacturing cost, the running cost is only the power used for charging the batteries(Negligible)
3) The user has complete control over the equipment unlike weather balloons which drift under wind.
4) Does not require expertise as the system is fully autopilot controlled
5) The autopilot has failsafe mode where the copter will return to launch when out of radio coverage.
6) The ground system has an easy to use interface where the user can define the mission requirements according to the needs
7) The copter has a special mode where the position hold functions makes the copter stay at a particular gps fixed location and auto stabilise even in case of cross winds.

AUTONOMOUS HUMANOID ROBOT

Kaustubh Nawade

An autonomous humanoid robot can have widespread applications in varied fields. A robust implementation of such a robot would be able to replace humans in human environment. Team AcYut has built six humanoid robots, each more advanced than the last, with the most recent ones being capable of playing autonomous humanoid soccer. The team intends to build a robot which is structurally capable of adapting to different tasks with ease, and craft artificial intelligence which would enable the robot to perform such tasks. This project will include development in the fields of path planning, cognition/behaviour, image processing, localization, stability, gait and feedback, apart from mechanical design and electronics. Camera and Inertial Measurement Unit will be the sensors and Dynamixel Servo motors will be the actuators for this system. Intel Atom processor will be used for computation.

CARSOS-AN EMERGENCY RESPONSE SYSTEM FOR VEHICLES

Harshit Bora

CarSOS is an emergency response system for vehicles which promotes safe driving enable with quick information sharing in the event of an accident or tragedy. The concept includes preventing the driver from driving the vehicle under the influence of alcohol and sharing of location details of the vehicle and nearby hospital or emergency numbers with the family members in case of accident.

The novelty of this system lies in its features and usefulness. The vehicle will be fitted with sensors that will not let its engine start if the driver is found under the influence of alcohol and inform concerned people if the driver is trying to start the vehicle under the influence of alcohol. The system helps in reaching out to concerned people in case of accident. The system immediately informs family and friends in case of an accident. It provides them (family and friends) the information about the location of accident and number of passengers in the vehicle that might require immediate medical help. The system helps them get contact details of nearby medical centres so that immediate help can be provided. The system also contains a one press emergency switch for any other unforeseen circumstances. Successful implementation of this system in vehicles will help in stoppage of drunk and driving, decrease in road related accidents and there by road accident deaths and increase the safety of women travelling in the vehicles.

TRAFFIC TECHNOLOGY SOLUTIONS

Debashis Senapati(Technology Evangelist) Swastik Saraf(3rd year Rajasthan Technical University) , Abhijeet Phatak(IIT-BHU-4th year), Ashok Yadaav(20Yrs Of Exp)

1. 1 4way Traffic point = 1TP , => 40TP = 1 Cluster
2. One Piezoelectric Integration System(PIS) would be deployed across every TP .
3. Self sustaining Model with ability to run algorithms based on Certain Exterior Parameters .(Part of Swacch Bharat Abhiyaan to clean Traffic in roads)
4. PIS would also have a DR (disaster recovery System) in case of Natural Calamities to auto disintegrate and TP would behave normal as in present Case.
5. A Traffic Command Center(TFC) for every cluster to handle data generated .
6. TFC would consist of a command center with apparatus to view data generated live across TP`s . Dedicated Skilled Technicians can be functional to handle data and monitor it .
7. The PIS would have algorithms to liberate traffic at the standalone TP`s by gauging certain parameters on the road which benefits the country as below

a. When integrated across 50 clusters then Natural Fuels Saved would be quite impactful and can be calculated

b. Efficiency of nation increases when people Save Time

8. When the total flowchart of the Innovation and Business Model is calculated certain experiments can be followed as below which can have very high impact in liberating traffic

a. RAPID Deployment Forces – A group of people can be trained deployed when we get data that there have been high clutter in traffic. These people can be quite efficient for the factor that human intervention can work wonders to liberate traffic. Furthermore a Skilled team can work wonders.

Self Sustaining Model – revenue generating schemes can be generated through Apps for Smart phones.

ZIMBA – COMMUNITY SCALED AUTOMATIC INLINE CHLORINE DOSING SYSTEM FOR SHARED WATER POINTS

Suprio Das

In developing countries four-fifths of all illnesses are caused by water borne diseases, with diarrhoea being the leading cause of childhood death. In India alone, 1600 children die every day due to water borne diseases, which are almost entirely preventable if safety of water is ensured. Major obstacles to consumption of safe drinking water include primary contamination at the source and secondary contamination during transportation from the point of collection and storage at home.

Water treatment at the point-of-use (POU) is cost effective, but success has been limited due to adoption issues and difficulty in ensuring correct chlorine dosage, filter replacement, etc. The problem can be overcome by a point-of-collection (POC) technology at the shared drinking water source, which removes the need for behaviour change by individual households by treating water by default. Chlorination has been shown to be effective in water treatment of biologically contaminated water and is used by large scale treatment in developed countries as well.

However the primary difficulties faced by existing chlorination approaches include low uptake by households due to the inconvenience of chlorinating water every time they collect it and errors in chlorine dosing, leading to unpalatable water or ineffectively treated water.

Zimba, an automatic chlorine doser with no moving parts and requiring no electricity, overcomes these challenges by:

1) Treating the water automatically at the point of collection.
2) Dispensing chlorine accurately regardless of water pressure or flow rate.
3) Being compatible with all types of hand pumps.

WATER ON WHEELS

Subhash Devi/ Sarang Dev/ Bhushan Acharya

Exclusive Features of APE' JAL DOOT

M/s Membrane Filters (I) Pvt ltd Pune based company has innovated project 'JAL Doot' a mobile safe drinking water system who has designed, engineered and manufactured who is the licensee of the technology invented by CSIR/NCL of UF Membrane Technology a prestigious laboratory of Government of India has several distinct advantages over the prevailing systems or methods being adopted and such a project being considered on pilot basis.

JAL DOOT is a proprietary product and the technology adopted is

- Ultra Filtration Membrane Technology that has Indian and US & has five stage filtration that covers PSF, GAC, Softener, Micro Filtration 20/10/1 micron followed by ULTRA FILTRATION and thereafter the water is stored in St St storage tank of capacity 500 Ltr and finally connected to a coin operated water dispenser
- PTO shaft specially developed to run the pump on the engine and when the vehicle is stationary of three wheeler manufactured by PIAGGIO, an International organization also applied for its patent since none of such three wheelers have such an unique feature that is an exclusive advantage of running JAL DOOT especially in villages.
- There are almost '125' JAL DOOTs in the remote villages around Pune, Aurangabad, Jalana, Marathwada, North Karnataka, Tripura, Orissa etc. Filtration of water without using electricity and carrying out filtration even outside the village and delivering water going house to house; is a specialty of the technology making safe drinking water Accessible, Available & Affordable in villages in particular

"TAP IN AIR WATER SOLUTIONS (LLP)."

Mr. Amey Botaljee, Mr. Anand Date, Mr. Amit Alurkar

The novelty of this machine lies in the simplicity of producing water from air. This water generated is crystal clear and potable at its generation point itself. No further purification is required.

This apparatus can be easily installed and commissioned. This machine is a boon in itself as it can produce drinking water at any remote & inaccessible dry places. Villages, communities in these hard -to -reach places can have their own drinking water source without the Government spending enormous amounts of money from their coffers in building infrastructure to provide water to these hard to reach places. This helps the government in REACHING THE UN-REACHED COMMUNITIES at a very feasible economical price.

These machines can be used on oil rigs, defence installation, hospital, and schools. This device can be used as a domestic drinking water generator in newly developed/ developing urban cites at a very relatively low cost of construction and maintenance.

Customizing the machine to produce max output of pure drinking water under any atmospheric conditions such as- highest temp in the desert areas, and the lowest temp in the hilly reason with minimal relative humidity. The machine shall give the maximum output of pure drinking water as per the design.

THE MULTI-PURPOSE TESTER AND CLEANER OF HUMAN WASTE IN RAILS AND PLATFORM IN RAILWAY STATIONS

G Krishna Kumar

Indian Railways, which is one of the major transport agencies across the world and in all fairness the faster and cheaper mode of transportation in India. Imagine the junctions left un-cleaned for a week, the stench alone would drive away all the commuters, cheaper or not. At this point in time, take a moment to think about people, who does all the cleaning up after - it sure does instigate one to take actions to relieve them off their miserable nature of work. Though the Government of India has introduced laws pertaining to sanitation that restricts humans cleaning up the night soil, the Indian Railways are still open and awaiting technology that could once and for all resolve this for them. Here, is the modest, yet most efficient machine that would replace the manual labor involved in cleaning up the night soil in the tracks/rails.

The objective of the invention is to avoid the involvement of human to clean the night soil (human waste) presented in the railway tracks and also for the multi-purpose application. The invention is a semi automated, compact, and low cost, faster and multi application machine which will avoid the human effort and zero corrosion on rails to improve the life of rails. Also the maintenance works to avoid the accidents also added in the product. The innovation is made by realising the responsibility of Engineering towards our society. A human being is cleaning the waste of another human being is the unacceptable work.

BDREAM SAUCHALAYA

Binish R Desai

BDream Sauchalaya is 5' x 5' toilet made using strong and durable P-blocks. There is no use of cement and sand in making this toilet unit; instead uses a special material made using the same raw materials used in the bricks. The cost of making this toilet is almost half to that of toilets constructed at present. The P-Blocks are fire resistant, high compressive strength, light-weight yet very low cost. The cost of making this toilet is just 5500Rs approved by District rural development agency to be used in rural areas.

MALPRABHA BIOGAS LINKED TOILETS

PradnyaThakur & S V Mapuskar

Malprabha model is innovative biogas linked system which ensures appropriate treatment and reuse of waste water from toilet as well as additional incentive of biogas which can substitute the cooking gas. This is an environment friendly ecological cost effective treatment system with reuse of resource approach.

The technology is developed by Dr. S. V. Mapuskar , a medical practioner from Dehu and. Pradnya Thakur is promoting and implementing it There is further development plan for reuse of water from Biogas plant and also development of prefabricated structure.

Appa Patwardhan Safai and Paryavaran Tantra Niketan Institute and Shahswat Eco Solution Foundation are two NGOs associate for promotion of the technology.

Advantages:

1. Maintenance of the plant can be easily managed by owners. It does not evoke any repulsive feeling.
2. Direct handling or carriage of night soil is not required at any stage.
3. Night soil is not exposed to surrounding. It is fed directly to the plant. Hence insects and animals do not get access to the night soil.
4. Aesthetically it is clean and odourless.
5. There is no contamination of surface soil or subsoil water.
6. The effluent digested slurry is virtually free from diseased causing organisms (pathogens)
7. As it is harmless and hygienic, it is an asset for community health.
8. It meets energy needs of the family through augmentation of fuel supply.
9. Slurry is usable as manure.

Biogas Production:

Biogas yield is around 40 liters/day/user, therefore, 1 latrine seat for 25 users has been provided for 1 CuM capacity of the plant. Assuming the total input of 2.5-3 liters/user/day, the volume of the chamber is planned to provide detention period of 45 days.

Projects Implemented: Implementation starts from 1981 in and around Dehu, Maharashtra at individuals, institutions etc.

SPRING ENGINE

Sanjeev Kumar

Electrical motor provides initial motion input to the crankshaft due to which piston moves and compresses the spring. Compression of spring produces strain energy into the spring. During upward stroke of piston, the energy of compression is transferred and stored in flywheel . due to inertia caused by the characteristics of flywheel it moves downward and compresses the spring; and thus the reciprocation of the piston is maintained; whereas the said motor runs continuously to provide residual motion to the said piston whenever required.

GENERAL EXPERIENCE :

Take a spring and compress by hand with zero velocity, we will experience less thrust and take same spring and compress by hand with some velocity , hand will experience more thrust. Since with zero velocity there is no K.E. of hand stored in spring, but when we provide K.E. of hand to spring, then total strain energy stored in spring= k.e. of hand +strain energy due to deformation of spring.

In spring engine there is free vibration and forced vibration (sinusoidal input) please see result section for analysis..

ZERO GRAVITY CONCEPTS-

ON FULL LOAD RUNNING THE FORCE ON PISTON BECOMES ZERO IN ORDER TO SATISFYING WEIGHTLESS CONDITION OF BOUNCING PISTON PRODUCED BY SPRING INHERENT CHARACTERISTIC (see trampoline educational use from Wikipedia).

When there is maximum force at crank shaft we get belt force 36.8N which is equal to differences of pulleys weights only.

ANALOGY TO ELECTRIC CIRCUIT-

As we know spring mass system can be easily analogized with electrical system comprising resistor, inductor and capacitor.

Because in electromagnetism there is zero gravity and also due to spring wave

that generates during full load running by means of sinusoidal input, there is also zero gravity condition exists .so we can easily compare spring mass system with electrical system.

Here is one point more when spring mass system produces zero gravity fields and can be compared with electromagnetism then it should also satisfy Einstein's law(please see calculation of SPRING ENGINE satisfying Einstein's law)

PLASMA EXPRESSOR SEMIAUTOMATIC TOP & BOTTOM

S M Mathur* & Omprakash Beniwal**
*Professor & Coordinator (TOCIC), College of Technology and Engg. Udaipur
**Technical supervisor, Blood Bank, RNT Medical College, Udaipur

Plasma expressor Semi automatic top and bottom is a mechanical device for separating plasma and buffy coat removed RBCs. It exerts uniform pressure on the blood bags during the separation of blood components. The purpose of this innovation is to generate Leuko Reduced Red Blood Cells at blood banks to reduce the adverse blood transfusion reactions. It will be an alternative to commercially available imported automated plasma expressor top and bottom. They are available only at tertiary level Medical Colleges associated with Blood Banks because of high initial cost and it requires trained man power. The proposed instrument is inexpensive, easy to operate and can be used in ground level Blood Banks. Thalassaemic patient will get leuco-reduced safe blood for frequent transfusions at their nearby Blood Bank.

The main components of the machine are Hydraulic Pump, Pressure lock switch, Pressure Plate, An Acrylic Plate, DC Motor with gear box, Power switch and Expressor body. Centrifuged blood bag is fastened on the hanger provided at the top and pressure plate is locked . Hydraulic pump exerts a uniform pressure on the blood bags and the blood components are collected in top and bottom bags. A flow control switch is also provided to control the flow of blood.

\The first model of the machine was tested by Terumo Penpol Ltd (TPL) and HLL life care Limited (HLL), Trivandrum; supported by the TIFAC, New Delhi. The machine was refined as per the s suggestions and again tested at Jaipur and Udaipur Medical Colleges. Machine was shown to the Additional Secretary of Health Ministry and he asked ICMR, New Delhi for its comments. A presentation was made to ICMR and everyone was very impressed for a cheap solution . ICMR has asked AIIMS, Red Cross New Delhi, and PGI, Chandigarh to evaluate the machine. The expenditure for fabrication of three more machines will be borne by DSIR New Delhi and the expenditure against the performance evaluation will be born by the ICMR, New Delhi. Commercialization of this machine will be a boon in the field of Transfusion Medicine

INDIA INNOVATIOIN INITIATIVE-i3

Opportunity to Harness Innovationa for Wealth Generation and Societal Benefit

Project ID	DL/WS/1069
Project Title	Zerodor : Low Cost, No Consumable, Chemical Free Waterless Urinal Technology
Name of Innovator(s)	Uttam Banerjee, Dr. V.M.Chariar
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Abstract (in Ms Word and maximum in 300 words)

With increasing emphasis on water conservation, there is renewed interest in toilets and urinals designed to minimize the amount of water consumed in flushing to mitigate excessive demands on water supplies as well as on waste water disposal systems, both of which have tended to overloaded with increasing population. Further, under basic sanitation guidelines the urinals should provide an order seal to contain gases and odours which develop in the drain system wherein this function is conventionally also performed by the residual portion of flushing water.

Waterless urinals odour prevention traps currently being used need regular replacement of parts for their continuous operation. These traps also require periodic maintenance routines to prevent blockages. In order to overcome these issues, a waterless urinal odour prevention technology “Zerodor” was successfully developed. Zerodor Technology is a chemical free technology, 1/5th the cost of the competing technologies and no recurring cost which makes it a much more attractive proposition. In addition there is an advantage in this technology of being able to retrofit into existing urinal pans.

Zerodor Waterless Urinals look very much like conventional urinals in design and these can be used in the same manner. However, Zerodor Waterless Urinals do not require water for flushing and thus result in saving anything between 56,800 litres to 1, 51,000 litres of water per urinal per year. Also, the dry operation of waterless urinals and touch free operations reduce spreading of communicable diseases. Innovative Odor trap mechanism “ZERODOR” developed jointly by IIT Delhi and Ekam Eco Solutions assist in preventing odor developed inside the drainage lines connected to urinals and it does not require replaceable parts or consumables resulting in low maintenance costs.

All India Council for Technical Education

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