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INDIA

Young Innovators Under 35 p29

Innovator of the Year
ANIRUDH SHARMA

Humanitarian of the Year
SOMNATH RAY

Social Innovator
VENKATESAN OOSUR VINAYAGAM

INDIAN TECHNOLOGIES
THAT WILL SHAPE
THE FUTURE

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It has been an exciting and inspiring experience to bring you this year's list of India's young innovators under the age of 35. This year we received over 250 nominations from all over India. Over a period of three months, a panel of 23 expert judges identified 20 individuals who have developed technologies that are likely to benefit the society at large. Our Social Innovator, for example, has developed a multilingual speech recognition technology enabled mobile music service that is based on the classic Indian musical game of *antakshari*. The innovation in Mobile Antakshari lies in adding the right usability and technology elements. The Innovator of the Year has created a haptic shoe for the visually impaired. The haptic feedback guides the user to the destination by vibrating in front, back, or on either side of the shoe, indicating that the user needs to turn. And our Humanitarian of the Year has redesigned the age-old para-transit vehicle for the disabled that gives them not only mobility, but also a mobile commerce platform. We hope you like the selection. —*The Editors*

INDIA TR35 2012 JURY

Aloknath De
Chief Technology Officer
Samsung India Software
Operations

Arvin Baalu
Director – Corporate Research
and Development
Harman International India

Ashok Vittal
Principal Engineer
Synopsys India

Dhananjaya Dendukuri
CEO
Achira Labs

GD Yadav
Vice Chancellor and RT Mody
Distinguished Professor
Institute of Chemical
Technology, Mumbai

Gopichand Katragadda
Managing Director
GE India Technology Center,
GE

Jyotish Kumar Ghosh
Senior Vice President and
Head – IT Services
Sify Technologies

Kavita Vemuri
Senior Research Scientist and
Head, Center for Innovation
and Entrepreneurship
International Institute of
Information Technology,
Hyderabad

Meera Sampath
Director,
Xerox Research Center India
Xerox

Narasimha Suresh
Founder and CEO
Telibrahma Convergent
Communications

Nitin Deshmukh
CEO
Kotak Private Equity Group
Kotak Mahindra

Puneet Mehrotra
Director
Nano Science and Technology
Consortium

Rahul De
Hewlett-Packard Chair
Professor
ICT for Sustainable Economic
Development
Indian Institute of Management,
Bangalore

Raja Krishnamurthy
Vice President - Technical
3M India

Raman Venkatesh
Senior Vice President and
CEO of SBU
Eureka Forbes

Ranjan Patnaik
Technical Manager – Biofuels
DuPont Knowledge Center,
India

Rikin Gandhi
CEO
Digital Green

Rinti Banerjee
Professor, Department of
Biosciences and Bioengineering
Center for Research in
Nanotechnology and Science
Indian Institute of Technology,
Bombay

RK Shyamasundar
Senior Professor and JC Bose
National Fellow
Faculty of Technology and
Computer Science
Tata Institute of Fundamental
Research

Sanjay Kakkar
Trustee
Thrombosis Research Institute

Sanjoy Paul
Senior Vice President,
Accenture and
Country-Director and
Head of Accenture Technology
Labs India

Satyam Sahay
Senior General Manager
John Deere Asia Technology
Innovation Center, Pune

Sridhar Ranganathan
Vice President
Strategic Initiatives
InMobi

Abhijit Majumder, 33

Making stronger adhesives that can imitate nature

INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

Inspired by insects and wall lizards that can run up vertical surfaces such as rock-faces or walls, Abhijit Majumder has created a microfluidic adhesive that can stick to the surface as tightly as a wall lizard does.

For long, surface patterns have been appreciated for controlling adhesion. However, Majumder's study observed that other than surface structures, the natural adhesive pads of insects also have sub-surface structures that play an equally important role in helping them defy gravity and stay on vertical surfaces. To replicate the phenomenon, he embedded subsurface microchannels into elastic adhesive films to demonstrate subsurface structure's influence on adhesion.

He further filled the micro-channels with liquid to exert a capillary force that modifies the apparent stiffness of the adhesive material, making it more compliant. The dynamic interplay of different forces results in an enhanced adhesion that is 30 times stronger than conventional adhesives.

"By more intelligent manipulation with channel geometry and arrangement, adhesion can be further

improved by 70 times," says Majumder. The uniqueness of the product lies in its reusability. "As the mechanism is based on mechanics and not on viscoelastic energy loss, the adhesion does not decrease even after 25 attachment-detachment cycles. Moreover, the same adhesive, with geometric manipulation can also be used as an easy-release coating that has a very low adhesion. The same mechanism also achieves strong adhesion underwater showing the potential of using this adhesive for marine and tissue adhesive applications," says Majumder.

The invention holds potential to be used for designing wall-climbing robots, surgical tapes, suture free surgery and underwater applications. Overall, it presents the possibility of designing smart responsive soft materials, prosthetics and soft joints, shock absorbers, pressure sensors and optical modifiers. Majumder has demonstrated some of these applications and is currently working on making the adhesive directional which will make detaching from one direction effortless while making it difficult to do the same from other directions.

Jay Meattle, 29

Demand side platform for selling ad inventories

SHAREAHOLIC.COM, DELHI

The online display advertising market is big. Yet as much as 90 percent of the available online display ad inventory in a day goes unsold, largely because untargeted display produces unprofitable results for most advertisers and also because buyers and sellers can't always be matched up in time. But recent advances in online advertising infrastructure have created advertising inventory exchanges and platforms to automate and enhance real-time inventory buying (RTB) of inventory with sophisticated algorithms.

Each of the over 15 billion daily RTB transactions require data for optimum performance and economic buying, and Jay Meattle's Shareaholic has created a powerful platform to deliver targetable data and audiences to these advertisers, a demand side platform (DSP) for selling ad inventories.

Display advertising inventory in the past was bought on blind faith but the advertisers today can buy inventory directly on the exchanges in real-time based on customers' buying behaviors and other such patterns. But a prerequisite to purchase via DSPs is the need for data. And Shareaholic is providing one of the largest caches of targeting data in the

world. Over two million people have downloaded Shareaholic.com's browser plug-ins, which enable content sharing through services like Facebook, Tumblr, Twitter, Google+ or plain old e-mail.

Advertisers, when subscribed, get access to targetable audiences based on interest and intent signals mined from users viewing habits, what and who they share with, and how influential they are. A case for this targeting capability, for example, would be to allow technology advertisers to target ads to only those people who share content about the iPhone and have more than one clickthroughs. It has been found that the performance, as measured by clickthrough rates, with this targeting capability was much higher than display ad buying without such targeting data. And Shareaholic's idea of building an intelligence layer based on sharing habits of users helps advertisers to make better buying decisions.