

One-day Brain-storming Workshop
on
"Robotics for Improved Livelihood in Indian Context"

Organized by
CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI), Pilani
at
CSIR-CEERI's Incubation-cum-Innovation Hub, Jaipur Centre
February 24, 2018

The Robotics Society in collaboration with CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI), Pilani organised a brain-storming workshop on "Robotics for Improved Livelihood in Indian Context" on 24th February, 2018 at CSIR-CEERI's Incubation-cum-Innovation Hub, Jaipur Centre. The objective of the brain-storming workshop was to identify possibilities of introduction of robotics and automation for improving productivity and income generation potential in Indian context. The program was attended by about 40 participants which included Prof. Santanu Chaudhury, Director, CSIR-CEERI & Convener, Prof. Souvik Bhattacharyya, Vice-chancellor, BITS, Pilani, Prof. Arun Pujari, Vice-Chancellor, Central University of Rajasthan, Prof. Subir Saha, IITD, Co-convenor, Prof. T. Asokan, IITM, , Dr. Sunil Jha, IITD, Dr. Jitendra Khatait, IITD, Dr. Swagat Kumar, TCS, Prof. Laxmi Behera, IITK, Dr. Sumantra Dutta Roy, IITD, Prof. P. K. Biswas, IITKGP, Dr. Abhishek Sarkar, IIIT, Dr. C. M. Ananda, CSIR-NAL, Dr. S. Nandy, CSIR-CMERI, Dr. G. Harit, IITJ, Dr. Atanendu Sekhar Mandal, CSIR-CEERI, Dr. S. A. Akbar, CSIR-CEERI, Dr. Ram Prakash, CSIR-CEERI, Dr. Anil Saini, CSIR-CEERI, etc.

	
<p>Lighting of lamp by Prof. Souvik Bhattacharyya, Vice-chancellor, BITS, Pilani & Chief-guest</p>	<p>Welcome address by Dr. Ram Prakash, Scientist-in-charge, CSIR-CEERI's, IIH, Jaipur</p>

The programme started with lighting of lamp by Chief-guest, Prof. Souvik Bhattacharyya, Vice-chancellor, BITS, Pilani as well as other on-dais dignitaries and welcome address was delivered by Dr. Ram Prakash, Scientist-in-charge, CSIR-CEERI's, Incubation-cum-Innovation Hub, Jaipur Centre. He welcomed all the delegates with warmth and gratitude. He applauded contributions of 'The Robotic Society' and expressed his thankfulness to choose CSIR-CEERI's Jaipur Centre as venue. He briefed about the aims and objectives of CSIR-CEERI's, Incubation-cum-Innovation Hub, Jaipur Centre and specially mentioned about the move of Director, CSIR-CEERI and his support for establishing this new Centre in the Capital of Rajasthan. He also informed that Department of Scientific and Industrial Research

(DSIR), New Delhi has supported for a project to establish a DSIR-Common Research & Technology Development Hub (DSIR-CRTDH) at Jaipur and has sanctioned Rs. 5 crore to start with this uniquely designed public oriented facility at Jaipur to support MSME/Startups. He told that Department of Science & Technology, Govt. of Rajasthan has also supported for Rural Technology Business Incubation Unit at CSIR-CEERI's Jaipur Centre and sanctioned Rs. 30 lakhs recently. This Centre has started functioning and there exists a huge opportunity for the technology developers/startups/NGOs to work together with CSIR-CEERI to uplift the life of the common man through science & technology interventions.



Prof. Santanu Chaudhury, Director, CSIR-CEERI addressing the gathering



Prof. Santanu Chaudhury, Director, CSIR-CEERI addressing media

Prof. Santanu Chaudhury, Director, CSIR-CEERI also welcomed all the delegates and presented the programme overview of the Workshop as convener. He mentioned that, in recent decades, the introduction of robotics has globally increased efficiency in the production processes multi-fold by replacing human labour. But we have to brain storm ourselves in Indian context that whether it is possible to identify applications and technology areas where robotics can increase productivity without replacement of human labour. In other words we have to design robotics systems such that these can increase efficiency of the production process without downsizing labour force. He emphasized that we need to identify few such India centric problems which are challenging and potentially have significant economic implications. As a research community we should focus on building up a coordinated and concerted effort to address these problems. Being president of 'The Robotic Society', Prof. Chaudhury also highlighted its objectives and functioning.

In his address Prof. Souvik Bhattacharyya, Vice-chancellor, BITS, Pilani & the Chief-guest of the day, appreciated the theme of the workshop. He mentioned that robotics is not a latest phenomenon and it has been part of high-tech industry since the advent of industrial age. However, the scope has changed drastically nowadays. In fact, today robotics finds usage beyond manufacturing and more towards areas like ecommerce, logistics, retail, healthcare, etc. and robotics also has significant overlap with artificial intelligence (AI). He specially highlighted the success story of two Indian origin entrepreneurs who started 'GreyOrange' organization in the year 2011. Now they have become a multinational technology firm, which designs, manufactures and deploys advanced robotics systems for automation at distribution and fulfilment centres. They combined expertise in robotics, hardware and software engineering to solve operational inefficiencies in warehouse operations at both third-party logistics vendors as well as companies with in-house logistics functions. Interestingly they have in-house Mechanical, Electrical, Embedded, UI/UX, Software department and quality assurance teams and accordingly GreyOrange has earned

global recognition. Addressing the august gathering, he urged to Indian experts to set such more examples and bring the glory of this county. He hoped that with this workshop we shall identify certain challenging problems related to our country and find solutions using robotics for some of the niche areas like Agriculture, Health, Disaster Management, Border Security, etc. At the end of the inaugural session, the vote of thanks was proposed by Prof. S. K. Saha, Head, Department of Mechanical Engineering, IIT Delhi and co-convener of the programme.



Prof. Souvik Bhattacharyya, Vice-chancellor, BITS, Pilani addressing the gathering

In the workshop there were total four technical sessions. The first technical session was devoted for defining the context and Prof. Santanu Chaudhury, Director, CSIR-CEERI and Prof. Subir Saha, Head, Department of Mechanical Engineering, IITD were the speakers. The second session was dedicated to Inclusive Automation (Manufacturing, Customer Service, Healthcare and Accessibility) and Prof. T. Asokan, IITM, , Dr. Sunil Jha, IITD, Dr. Jitendra Khatait, IITD, Dr. Swagat Kumar, TCS were the speakers. The third session was committed to Disaster and Hazardous Situation Management and Prof. Laxmi Behera, IITK, Dr. Sumantra Dutta Roy, IITD, Prof. P. K. Biswas, IITKGP, Dr. Abhishek Sarkar, IIIT were the speakers. The fourths technical session was on Agriculture, Transportation, Surveillance and Dr. C. M. Ananda, CSIR-NAL, Dr. S. Nandy, CSIR-CMERI, G. Harit,IITJ were the speakers.





Discussion among participants



Speakers in the brain storming session

There was also a concluding session organized which was chaired by Prof. Arun Pujari, Vice-Chancellor, Central University of Rajasthan and the key members of the panel were Dr. Subir Saha, IITD, Prof. Santanu Chaudhury, Director, CSIR-CEERI, Prof. Souvik Bhattacharya, VC, BITS and Prof. L. Behera, IITK. The discussion was led by Prof. Arun Pujari, Vice-Chancellor, Central University of Rajasthan and workshop participants were asked for their view points. He also brought out a number of problems in Indian context, which need immediate action from the members of the robotic society. At the end he presented the zest of the workshop and expressed his happiness for successful organization of the workshop.



Prof. Arun Pujari, Vice-Chancellor, Central University of Rajasthan speaking during concluding session



Prof. Santanu Chaudhury, Director, CSIR-CEERI, Pilani speaking during Concluding session

Prof. Santanu Chaudhury, Director, CSIR-CEERI in his concluding remarks suggested that we should bring out a vision document at the earliest possible so as to complement the Indian Govt. mission on Artificial Intelligence. Four teams were formed as per the title of technical sessions and it was decided to compile the document within a month time scale. At the end of the workshop, Dr. S. A. Akbar, Head, PMBD proposed the vote of thanks.



Dr. S. A. Akbar, Head, PMBD proposing vote of thanks



Participants of the Workshop