MEETING REPORT

Technologies for future cities*

Cities in developing countries are rapidly expanding. India has 438 cities with a population of more than 100,000 people, accounting for 11% of the world's cities. It is expected that the urban population will be doubled in next 25 years. Unfortunately, the development is unplanned and chaotic, resulting in inequitable distribution of public services, costly housing, a lack of adequate streets and roads, and insufficient open spaces. Scientists and engineers all over the world are looking for technological solutions to problems such as poor urban planning, non-availability of affordable housing, deficiency in water supply or electricity, unorganized traffic, poor-quality public transport and parking facilities, poor healthcare system, waste management, air and water pollution, etc.

A conference on 'Technologies for Future Cities' was conducted last year to examine some of the challenges raised above; it was the second in the series, with the first happening in January 2019. Around 150 scientists and engineers attended the conference. The invited talks and contributed papers covered six tracks, namely (i) Software technologies for future cities, (ii) Hardware technologies for future cities, (iii) Systems for future cities, (iv) Materials for future cities, (v) Healthcare for future cities and (vi) Policies and governance for future cities.

*A report on the conference on 'Technologies for Future Cities' held at Pillai College of Engineering, New Panvel during 8–9 October 2021.

The conference was inaugurated by R. K. Shevgaonkar (IIT Bombay, Mumbai) who highlighted the importance of artificial intelligence and machine learning in public transport and healthcare. He emphasized, however, that the human aspect of conscience will never be captured by machines, and that the foregoing techniques should not be used at the expense of humanistic factors.

Pradipta Banerjee (IIT Bombay), who was the keynote speaker, discussed the importance of observatories in urban planning. He appreciated that the Pillai College of Engineering, New Panvel has an Urban Expansion Observatory and it is making important contributions to the subject.

The first technical talk was by Sanjay Oak (Kaushlya Hospital Trust, Thane, and Chairman of the Task Force for COVID-19 in Maharashtra). He provided an excellent exposure to emerging technologies in future healthcare. Oak highlighted the need of translating scientific advances from the laboratory to the bedside, and that no technology is useful unless it makes a difference in the lives of ordinary citizens. As an example he illustrated how the materials developed for space technology were successfully used to reduce the weight of callipers worn by physically challenged individuals, from 4 kg to about 400 g. He also spoke of the use of robotic nurses in hospitals, thus obviating the contact between COVID-19 infected patients and healthy nurses. The other talk in the healthcare session was by S. N. Talbar (Shri Guru Gobind Singhji Institute of Engineering

and Technology, Nanded), who discussed the role of image analysis techniques in brain tumour segmentation and analysis.

Saurabh Mehta (Vidyalankar Institute of Technology, Mumbai), discussed the role of Internet of Everything (IoE) in addressing some of the problems of future cities, during a session on hardware technologies. Milind Kulkarni (Prachi Services Inc, Mumbai) spoke on the use of recent technologies for solid waste management in future cities.

In addition to the above-mentioned physical lectures, there were two virtual talks as well. Veerle Vandeginste (Katholieke Universiteit, Leuven, Belgium) talked about advanced materials for smart buildings and Padmaja Joshi (C-DAC, Mumbai) spoke on the importance and relevance of block chain in urban development and planning.

The conference concluded with a panel discussion, in which the panellists were largely from the industry. There was a general consensus that extant technology, if utilized effectively, are enough to tackle the issues of current and future cities. Anupama Karanam (NAINA, CIDCO, Navi Mumbai) mentioned that while the development of the technologies is important, it is equally important to adopt the available technologies as they would have a significant positive effect on the deliverables by the system.

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