

IEEE CIS Distinguished Lecture Program

by Prof. Pierre-Yves Oudeyer, FIEEE, INRIA, France

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| Date of Event: | 24 th February 2021 |
| Time: | 19:30 IST to 21:15 IST |
| Mode: | Online (Google Meet) |
| Hosted by: | Department of Information Technology, RCC Institute of Information Technology, Kolkata, India |
| Local Coordinator: | Dr. Indrajit Pan, Associate Professor and Head, Department of IT, RCCIIT, Kolkata |
| Supervision: | Prof. (Dr.) Paramartha Dutta, Ex-Chair, IEEE CIS Kolkata Chapter Prof. (Dr.) Tandra Pal Chair, IEEE CIS Kolkata Chapter |
| Attendance: | 40 (Registered) + 41 (Invited) |
| Title of the Lecture: | Developmental Machine Learning: Machines that learn like children ... and help children learn better |

Abstract

Current the use of real robotic platforms for evaluating these models has led to highly efficient unsupervised learning methods, enabling robots to discover and learn multiple skills in high dimensions in a handful of hours. I will discuss how these techniques are now being integrated with modern deep learning methods. Finally, I will show how these models and techniques can be successfully applied in the domain of educational technologies, enabling to personalize sequences of exercises for human learners, while maximizing both learning efficiency and intrinsic motivation. I will illustrate this with a large-scale experiment recently performed in primary schools, enabling children of all levels to improve their skills and motivation in learning aspects of mathematics.

Brief Profile of Prof. Pierre-Yves Oudeyer, FIEEE, INRIA, France

Dr. Pierre-Yves Oudeyer is Research Director (DR1) at Inria and head of the Inria and Ensta-ParisTech FLOWERS team (France). Before, he has been a permanent researcher in Sony Computer Science Laboratory for 8 years (1999-2007). He studied theoretical computer science at Ecole Normale Supérieure in Lyon, and received his Ph.D. degree in artificial intelligence from the University Paris VI, France. He has been studying lifelong autonomous learning, and the self-organization of behavioural, cognitive and cultural structures, at the frontiers of artificial intelligence, machine learning, cognitive sciences and educational technologies. He has been developing models of intrinsically motivated learning, pioneering curiosity-driven learning algorithms working in real world robots,

and developed theoretical frameworks to understand better human curiosity and autonomous learning. He also studied mechanisms enabling machines and humans to discover, invent, learn and evolve communication systems. He has published two books, more than 100 papers in international journals and conferences, holds 8 patents, gave several invited keynote lectures in international conferences, and received several prizes for his work in developmental robotics and on the origins of language. In particular, he is laureate of the Inria-National Academy of Science young researcher prize in computer sciences, and of an ERC Starting Grant EXPLORERS. He is also editor of IEEE CIS Newsletter on Cognitive and Developmental Systems where he organizes interdisciplinary dialogs in cognitive science, AI and robotics, as well as associate editor of IEEE Transactions on Cognitive and Developmental Systems and Frontiers in Neurorobotics. He has been chair of IEEE CIS Technical Committee on Cognitive and Developmental Systems in 2015-16. He is also working actively for the diffusion of science towards the general public, through the writing of popular science articles and participation to radio and TV programs as well as science exhibitions.

Glimpses of Events

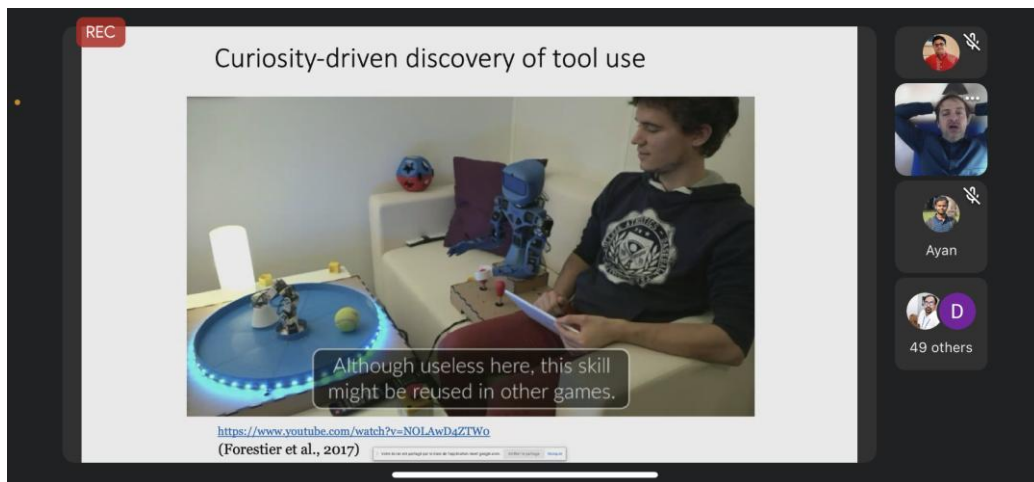


Fig. 1: Glimpse of Participants during DLP and Presentation

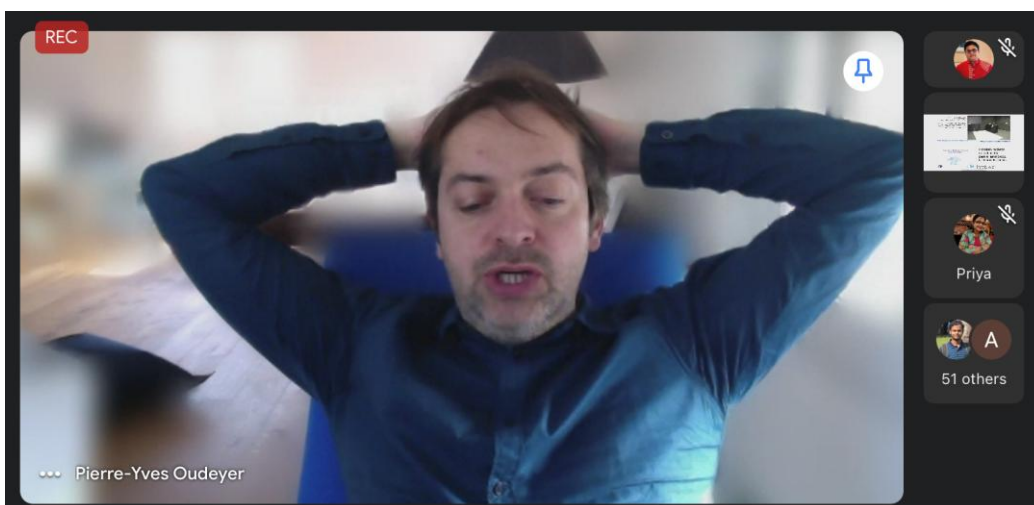


Fig. 2: Prof. Pierre-Yves Oudeyer during interaction with participants

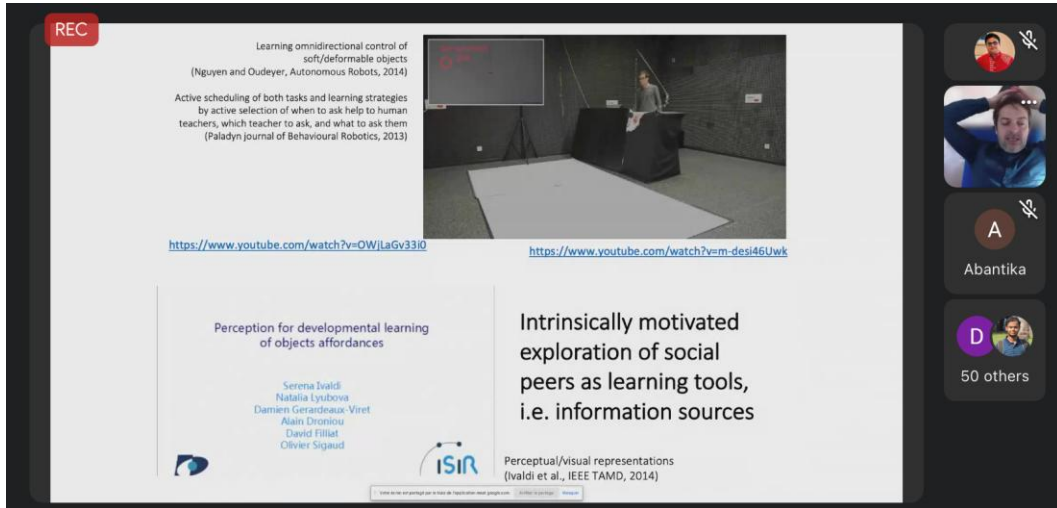


Fig. 3: Presentation

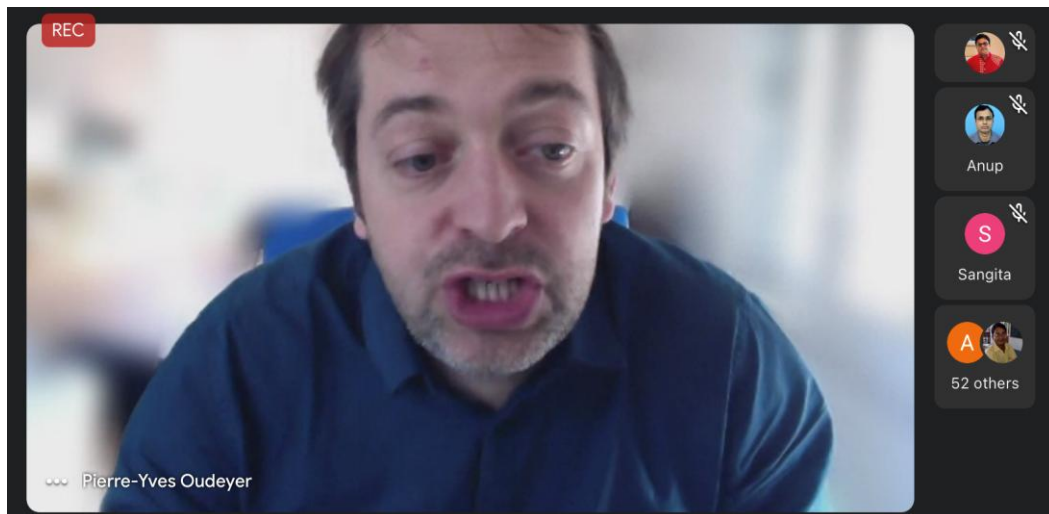


Fig. 4: Prof. Pierre-Yves Oudeyer during Q & A session

List of Participants

| Sl. No. | Name | Institute | IEEE Membership ID |
|---------|---------------------|---|--------------------|
| 1 | Amit Khan | RCC Institute of Information Technology | |
| 2 | Dr. Soham Sarkar | RCC Institute of Information Technology | |
| 3 | Soumi Saha | Acharya Girish Chandra Bose College | |
| 4 | Jayanti Das | RCC Institute of Information Technology | |
| 5 | Dr. Sangita Agarwal | RCC Institute of Information Technology | |
| 6 | Akhil Kumar Das | Gour Mahavidyalaya | |
| 7 | Sarbojit Mukherjee | RCC Institute of Information Technology | 97502773 |
| 8 | Farhana Sultana | University of Gour Banga | 94562397 |

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|----|--------------------------|---|----------|
| 9 | MANJULA KUMARI | NIT DURGAPUR | |
| 10 | Ahana Patra | RCC Institute of Information Technology | |
| 11 | PRIYA SEN PURKAIT | RCC Institute of Information Technology | |
| 12 | Moumita Kumar(Roy) | Netaji Mahavidyalaya | |
| 13 | SOUMI GHOSH | Dsnet Solution | |
| 14 | KOYEL CHAKRABORTY | Supreme Knowledge Foundation Group of Institutions | |
| 15 | Debraj Chatterjee | Techno International New Town | |
| 16 | Satarupa Das | Visva Bharati University | |
| 17 | Anjan Paul | Visva-Bharati University | |
| 18 | Mou Karmakar | University of Gour Banga | |
| 19 | Shyantani Maiti | RCC Institute of Information Technology | |
| 20 | Aditya Kaushal Ranjan | National Institute of Technology Patna | |
| 21 | SIDDHARTHA CHATTERJEE | Gargi Memorial Institute of Technology Kolkata | |
| 22 | Abantika Choudhury | RCC Institute of Information Technology | |
| 23 | SUBHASREE DATTA | VISVA BHARATI UNIVERSITY | |
| 24 | Nilesh | NIT Durgapur | |
| 25 | Rachita | C.V. Raman College of Engineering | |
| 26 | Soumitra Sasmal | Techno Main Salt Lake | |
| 27 | Abrar Khan | NIT Patna | |
| 28 | Rakesh Ranjan | NIT Patna | |
| 29 | Dr. Tiya Dey Malakar | RCC Institute of Information Technology | |
| 30 | Arindam Mondal | RCC Institute of Information Technology | |
| 31 | Jayanta Datta | RCC Institute of Information Technology | |
| 32 | Dr Sadhan Kumar Dey | RCC Institute of Information Technology | |
| 33 | Anup Kumar Mallick | Kalyani Government Engineering College | 93914229 |
| 34 | Md Nasir | Visva-Bharati University | |
| 35 | SUPARNA DEY | Visva Bharati University | |
| 36 | Chiranjit Mura | Visva Bharati University | |
| 37 | Arijit Bhattacharya | Gour Mahavidyalaya | |
| 38 | TANUSHREE DAS | Visva Bharati University | |
| 39 | Ekram Alam | Gour Mahavidyalaya | |
| 40 | Ayan Gupta | University of Gour Banga | |