



# Institute colloquium

## Robot programming for all

**Maya Cakmak (University of Washington)**

### Abstract

Robots that can assist humans in everyday tasks have the potential to improve people's quality of life and bring independence to persons with mobility limitations. A key challenge in realizing such robots is programming them to meet the unique and changing needs of users and to robustly function in their unique environments. Most research in robotics targets this challenge by attempting to develop universal or adaptive robotic capabilities. This approach has had limited success because it is extremely difficult to anticipate all possible scenarios and use-cases for general-purpose robots or collect massive amounts of data that represent each scenario and use-case. Instead, my research aims to develop robots that can be programmed in-context and by end-users after they are deployed, tailoring it for the specific environment and user preferences. To that end, my students and I have been developing new techniques and tools that allow intuitive and rapid programming of robots to do useful tasks. In this talk I will introduce some of these techniques and tools, demonstrate their capabilities, and discuss some of the challenges in making them work in the hands of potential users and deploy them in the real world.

### Bio

Maya Cakmak is the Robert E. Dining Career Development Associate Professor at the Paul G. Allen School of Computer Science & Engineering, University of Washington, where she directs the Human-Centered Robotics lab. She received her PhD in Robotics from the Georgia Institute of Technology in 2012, after which she spent a year as a post-doctoral research fellow at Willow Garage, one of the most influential robotics companies. Her research interests are in human-robot interaction, end-user programming, and assistive robotics. Her work aims to develop robots that can be programmed and controlled by a diverse group of users with unique needs and

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to do useful tasks. Maya's work has been published at major Robotics and AI and journals, demonstrated live in various venues and has been featured in media outlets. Tools that she and her students developed are being used by robotics

ie Savioke, Fetch Robotics, and Hello Robot. She received an NSF CAREER award an Research Fellowship (2018), and Early Career Spotlight Awards at R:SS (2018) and IJCAI (2019).