Keynote Talk 4

Autonomous Distributed Systems of Mobile Robots
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Abstract:

We regard a set of autonomous mobile robots as a distributed system and investigate it from the view of distributed computing. After introducing the model of mobile robot system, we observe that a system of anonymous and memory-less robots can successfully exhibit some autonomous properties such as the self-organization and the self-stability, which are considered to be an important property required for e.g., robust sensor networks. Through the talk, we explore what problems the robots can solve without identifiers and memory, and discuss why they can. We then come up with the fact that molecules can exhibit autonomy without identifiers and memory -- a similarity between robots and molecules, which may justify an abuse of our using the robot model as a model of more general distributed systems including e.g., molecular computing.

Short Biography:

Dr. Yamashita received his Doctor of Engineering degree from Nagoya University, Nagoya, Japan in 1981. From 1980 to 1985, he was a research associate at Toyohashi University of Technology. In 1985, he joined Hiroshima University as an associate professor, and was a professor from 1992 to 1998. Since 1998, he is a professor at Kyushu University. He has held visiting appointments many times with Simon Fraser University, Ottawa University, Carleton University, University of Wisconsin-Milwaukee and Paris 6 University. His research interest includes distributed algorithms. He is a member of IEICE, IPSJ, JSIAM and IEEE.