The Center for Control, Dynamical Systems, and Computation
University of California at Santa Barbara
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Presents

Deployment and Territory Partitioning for Gossiping Robots

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Abstract:

Deployment, coverage and partitioning are fundamental tasks for robotic networks. Recently proposed algorithms achieve these tasks under a critical assumption: information is exchanged synchronously among all agents and long-range communication is possibly required. This work proposes novel deployment and partitioning algorithms that require only gossip communication, i.e., asynchronous, pair wise, and possibly unreliable communication. Which robot pair communicates at any given time may be selected deterministically or randomly. A key novel idea is the description of the deployment, coverage and partitioning problems as a control system on the space of partitions - in other words, we study the evolution of the regions assigned to each agent, rather than the evolution of the agents' positions. The novel gossip algorithms are shown to converge to multicenter Voronoi partitions under appropriate technical conditions.

About the Speaker:

Ruggero Carli received the Laurea Degree in Information Engineering from the University of Padova, Italy in 2004. From 2005 to 2008 he has been a PhD student with the Department of Information Engineering, University of Padova. He is currently a Post Doctoral Fellow with the Department of Mechanical Engineering - Center for Control, Dynamical Systems, and Computation at University of California, Santa Barbara (USA). His research interest includes control under communication constraints, cooperative control and distributed estimation.