

ROBOCOMM TECHNICAL PROGRAM

DAY 1: OCTOBER 15

8:45-9:00 Opening Remarks

Plenary 1: 9:00-10:00

Raffaello D'Andrea, Cornell University

Chair: Kostas Kyriakopoulos

Coffee break 10:00-10:30

Session 1: 10:30-12:35

MOBILITY FOR COMMUNICATIONS

Chair: Lydia Kavraki

10:30 - 10:55

C. Dixon. Maintaining Optimal Communication Chains in Robotic Sensor Networks using Mobility Control

10:55 - 11:20

C.C. Ooi and C. Schindelhauer. Minimal Energy Path Planning for Wireless Robots

11:20 - 11:45

C. Reinl and O. von Stryk. Cooperative Control of Multi-Vehicle Systems Under Communication Constraints Using Mixed-Integer Linear Programming

11:45 - 12:10

S. Poduri and G.S. Sukhatme. Achieving Connectivity through Coalescence in Mobile Robot Networks

12:10 - 12:35

A. Muhammad. Sensor Selection and Motion Planning in Robotic Sensor Networks Under Communication Constraints

Lunch 12:35-14:00

Session 2: 14:00-15:40

LOCALIZATION AND TRACKING

Chair: Alcherio Martinoli

14:00 - 14:25

S. Bergbreiter, A. Mehta, and K. Pister. PhotoBeacon: Design of an Optical System for Localization and Communication in Multi-Robot Systems

14:25 - 14:50

B.I. Triplett, D.J. Klein, and K.A. Morgansen. Distributed Estimation for Coordinated Target Tracking in a Cluttered Environment

14:50 - 15:15

B. Sohn. Localization System for Mobile Robot Using Wireless Communication with IR Landmark

15:15 - 15:40

M. Vendittelli , A. Franchi , L. Freda , G. Oriolo. A Decentralized Strategy for Cooperative Robot Exploration

15:40-16:00 Coffee break

Session 3: 16:00-18:20

DECENTRALIZED COORDINATION

Chair: Panagiotis Tsiotras

16:00 - 16:25

D. Dimarogonas and K. Kyriakopoulos. Decentralized Swarm Aggregation with Static Communication Links

16:25 - 16:40

R. Pissolato, B. Pimentel, and M. Campos. Dynamic Sensor Coverage with Mobile Robots under Cooperative Communication

16:40 - 17:05

K. Bekris, K. Tsianos, and L. Kavraki. A Distributed Protocol for Safe Real-Time Planning of Communicating Vehicles with Second-Order Dynamics

17:05 - 17:30

I.U.Mir. A Fully Decentralized Approach for Incremental Perception

17:30 - 17:55

J. Certo. A Generic Multi-Robot Coordination Strategic Layer

17:55 - 18:20

Christopher M. Cianci, Thomas Lochmatter, Jim Pugh, and Alcherio Martinoli. Toward Multi-Level Modeling of Robotic Sensor Networks: A Case Study in Acoustic Event Monitoring.

DAY 2: OCTOBER 16

Plenary 2: 9:00-10:00

Dr Gerard McKee, Active Robotics Laboratory, University of Reading, UK

Chair: Magnus Egerstedt

Coffee break: 10:00-10:30

Session 4: 10:30-12:10

CONTROL ARCHITECTURES

Chair: Alan Winfield

10:30 - 10:55

L. Mota and L. Reis. Setplays: Achieving Coordination by the appropriate Use of arbitrary Pre-defined Flexible Plans and Inter-Robot Communication

11:55 - 11:20

B. Smith, M. Egerstedt, and A. Howard

Automatic Generation of Persistent Formations for Multi-Agent Networks

Under Range Constraints

11:20 - 11:45

U.P. Schultz. Distributed Control Diffusion: Towards a Flexible Programming Paradigm for Modular Robots

11:45 - 12:10

O. Azouaoui. Behavioral Multi-Agent Based Control Architecture for Autonomous Robotic Systems

Lunch 12:10-14:00

POSTER SESSION 1:

14:00 - 15:20

Poster 1: K.W. N'Ong. A Flexible Robot Assists Human Teleoperation under Implicit Communication Scheme

Poster 2: R. Vaidyanathan. Semi-autonomous micro air and ground vehicle control and video relay through internet and iridium networks

Poster 3: Y. Yoon, H.J. Kim, T. Choe, and Y. Park. Communication in distributed model predictive collision avoidance

Poster 4: W. Turek. Motion Coordination Method for Numerous Groups of Fast Mobile Robots

Poster 5: M. Li, B. Prabhakaran, I. Chlamtac, F. De Pellegrini, and A. Alvarez. ROBOTRAK: A Centralized Real-time Monitoring, Control, and Coordination System for Robot Swarms

Poster 6: A. Cezayirli and F. Kerestecioglu. Navigation of Autonomous Mobile Robots in Connected Groups

Poster 7: R. Singh. Path Planning using Shi and Karl Level Sets

Poster 8: H. Narahara. Relationship between Robot's Gesture and Human's Emotion Observing the Robot

Poster 9: M. Shimokura. Networks for a symbiotic Human Life with Robots

Poster 10: L. Zalud. User Interface for Multiple Mobile Robot Teleoperation

Poster 11: K. LeBlanc and A. Saffiotti. Cooperative Information Fusion in a Network Robot System

Poster 12: M. Righi. Romeo and Juliet: an infrared search system

POSTER SESSION 2:

15:20 - 16:40

Poster 13: S. Souissi. Gathering Two Stateless Mobile Robots Using Very Inaccurate Compasses in Finite Time

Poster 14: Y. Miyamoto. How Humans Evaluate the Impression when Interacting Haptically with a Robot

Poster 15: M. Bordignon, E. Pagello, and A. Saffiotti. An Inexpensive, Off-The-Shelf Platform for Networked Embedded Robotics

Poster 16: J.P. Murphy, L.M. Wachter, and L. Ray. Computational Resource Allocation in Cooperative Control of Mobile Robots

Poster 17: Soko Aoki. Spinning Sensors: Middleware for Robotic Sensor Network

Poster 18: K. Huguenin. An Architecture for Distributed Collaborative Adaptive Sensing

Poster 19: K. Kamejima. Robotic Anticipation on Satellite-Roadway-Vehicle Network

Poster 20: H. Sugiyama. Reconnaissance into Distant Spaces by Multi-Robot Rescue System with Ad Hoc Networking

Poster 21: C. Park. An Emotion Expression Robot: KOBIE

Poster 22: C. Christodoulopoulos, C. Kyriakopoulos, and A. Kanatas. A realistic approach to source localization using a wireless robotic network

Poster 23: J. Shin. Formation flight control under communication failure

Poster 24: Salman Ahmed. Motion Coordination of Multi Agent Robots

16:40 - 17:00 Coffee break

Session 5: 17:00-18:55

NETWORKED SENSING

Chair: Dimos Dimargonas

17:00 - 17:25

H. Sakai, H. Kawanami, T. Cincarek, K. Shikano, H. Saruwatari, and A. Lee. Voice Activity Detection Applied to Hands-Free Spoken Dialogue Robot based on Decoding using Acoustic and Language Model

17:25 - 17:40

M. de Graaf. Ethernet-based communication framework for sensor integration on industrial robots

17:40 - 18:05

E.W. Frew. Information-Theoretic Integration of Sensing and Communication for Active Robot Networks

18:05 - 18:30

Oscar Alonso. An Optical Interface for Inter-Robot Communication in a Swarm of Microrobots

18:30 - 18:55

G. Sankaranarayanan, B. Hannaford, and L. Potter. Measurement and Emulation of Time Varying Packet Delay with Applications to Networked Haptic Virtual Environments

DAY 3: OCTOBER 17

Session 6: 8:30-10:10

RECONFIGURABLE NETWORKS

Chair: Luca Schenato

8:30 - 8:55

H. Kurokawa. Self-Reconfigurable Modular Robot M-TRAN: Distributed Control and Communication

8:55 - 9:20

R.F.M. Garcia, D.J. Christensen, K. Stoy, and A. Lyder. Hybrid Approach: A Self-Reconfigurable Communication Network for Modular Robots

9:20 - 9:45

F. Zeiger. An Application Protocol to Integrate a Small Size Helicopter into an IP based Ad-Hoc Network

9:45 - 10:10

K. Obraczka. Networking Under Episodic Connectivity for Autonomous Multi-Robot Coordination

Coffee break 10:10-10:40

Session 7: 10:40-12:45

DECENTRALIZED DECISION MAKING

Chair: P.R. Kumar

10:40 - 11:05

E. Frazzoli, M. Pavone, V. Isler, and N. Bisnik. Decentralized Vehicle Routing in a Stochastic and Dynamic Environment with Customer Impatience

11:05 - 11:30

C. Li. RationalSwarms for Distributed On-line Bayesian Search

11:30 - 11:55

F. Stulp, H. Utz, M. Isik, and G. Mayer. Implicit Coordination with Shared Belief: A Heterogeneous Robot Soccer Team Case Study

11:55 - 12:20

D.J. Christensen. Neighbor Detection and Crosstalk Elimination in Self-Reconfigurable Robots

12:20 - 12:45

X. Han, C.C. Shen, and L. Rossi. Autonomous Navigation of Wireless Robot Swarms with Covert Leaders

Lunch 12:45-14:10

Session 8: 14:10-15:50

APPLICATIONS AND DEVICES

Chair: Daniel Klein

14:10 - 14:35

G. Sankaranarayanan, B. Hannaford, H. King, S.Y. Ko, M. Lum, J. Rosen, and D. Friedman. Portable Surgery Master Station for Mobile Robotic Surgery

14:35 - 15:00

P. Hinterseer. THE WEBER QUANTIZER: PERCEPTUAL CODING FOR NETWORKED TELEPRESENCE AND TELEACTION

15:00 - 15:25

M. Broxvall. A Middleware for Ecologies of Robotic Devices

15:25 - 15:50

G. Sankaranarayanan and B. Hannaford. Comparison of Performance of Virtual Coupling Schemes for Haptic Collaboration using Real and Emulated Internet Connections

15:50-16:10 Coffee break

Session 9: 16:10-18:05

TOOLS AND SIMULATORS

Chair: Emilio Frazzoli

16:10 - 16:35

T. Chiueh, R. Krishnan, and P. De. A Networked Robot System for Wireless Network Emulation

16:35 - 16:50

P.W. Chen and S. Sastry. Latency and Connectivity Analysis Tools for Wireless Mesh Networks

16:50 - 17:15

A. Tiderko and T. Bachran. A Service Oriented Framework for Wireless Communication in Mobile Multi Robot Systems

17:15 - 17:40

G. ROUSSOS. Shared Memories: A Trail-based Coordination Server for Robot Teams

17:40 - 18:05

S. Hara. A Common Coordinates/Heading Direction Generation Method for Wireless-Networked Robots only with Ranging Capability

18:05 - 18:10

Closing remarks