Pratap Tokekar

Phone:	–	Virginia Tech
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Education

University of Minnesota, Minneapolis, U.S.A.
Ph.D. in Computer Science, 2008–2014.
Advisor: Prof. Volkan Isler.
Thesis: *Placement and Motion Planning Algorithms for Robotic Sensing Systems.*

College of Engineering Pune, University of Pune, India.
Bachelor of Technology in Electronics & Telecommunication, 2004–2008.

Employment

Assistant Professor, Fall 2015–Present.
Dept. of Electrical & Computer Engineering, Virginia Tech.

Post-Doctoral Researcher, September 2014–July 2015.
Dept. of Mechanical Engineering & Applied Mechanics, University of Pennsylvania.
Supervisor: Prof. Vijay Kumar.

Research Assistant, January 2009–August 2014.
Dept. of Computer Science, University of Minnesota.
Advisor: Prof. Volkan Isler.

Visitor, Max-Planck Institute for Biological Cybernetics, Tübingen, Germany. May 2013.
Host: Dr. Antonio Franchi.

Research Assistant, January 2009–May 2009.
Dept. of Computer Science, University of Minnesota.
Advisor: Prof. Nikolaos Papanikolopoulos.

Teaching Experience

Instructor, Department of Electrical & Computer Engineering, Virginia Tech.
ECE 6504: Advanced Topics in Robotics, Fall 2015.

Teaching Assistant, Department of Computer Science, University of Minnesota.
Computer Vision, Spring 2011, Spring 2014.
Introduction to Intelligent Robotics, Fall 2012.

Publications

Journal Articles

Published

[J6] J. Vander Hook, **P. Tokekar** and V. Isler. Algorithms for Cooperative Active Localization of Static Targets with Mobile Bearing Sensors under Communication Constraints. *IEEE Transactions on Robotics. To Appear.*

[J5] **P. Tokekar**, N. Karnad and V. Isler. Energy-Optimal Trajectory-Planning for Car-like Robots. *Autonomous Robots*, 37(3): 279–300, 2014.

[J4] J. Vander Hook, **P. Tokekar** and V. Isler. Cautious Greedy Strategy for Bearing-Only Active Localization: Analysis and Field Experiments. *Journal of Field Robotics*, 31(2): 296–318, 2014.

[J3] **P. Tokekar**, E. Branson, J. Vander Hook and V. Isler. Tracking Aquatic Invaders: Autonomous Robots for Monitoring Invasive Fish. *IEEE Robotics and Automation Magazine*, 20(3): 33–41, 2013.

[J2] P. A. Plonski, **P. Tokekar** and V. Isler. Energy-Efficient Path Planning for Solar-Powered Mobile Robots in Complex Environments. *Journal of Field Robotics*, 30(4):583–601, 2013.

[J1] **P. Tokekar**, D. Bhadauria, A. Studenski and V. Isler. A Robotic System for Monitoring Carp in Minnesota Lakes. *Journal of Field Robotics*, 27(6):779–789, 2010.

Book Chapters (Refereed)

[B2] P. A. Plonski, **P. Tokekar** and V. Isler. Energy Efficient Path Planning for Solar Powered Mobile Robots in Complex Environments. *Experimental Robotics. Springer Tracts in Advanced Robotics.* Proceedings of the *International Symposium on Experimental Robotics (ISER)*, 2012.

[B1] J. Vander Hook, **P. Tokekar**, E. Branson, P. Bajer, P. Sorensen and V. Isler. Local-Search Strategy for Multi-Modal, Multi-Target, Active Localization of Invasive Fish. *Experimental Robotics. Springer Tracts in Advanced Robotics.* Proceedings of the *International Symposium on Experimental Robotics (ISER)*, 2012.

Conference Proceedings (Refereed)

Published

[C12] P. Dames, **P. Tokekar** and V. Kumar. Detecting, Localizing, and Tracking an Unknown Number of Moving Targets Using a Team of Mobile Robots. *International Symposium on Robotics Research (ISRR)* 2015. To appear.

[C11] **P. Tokekar** and V. Kumar. Visibility-based Persistent Monitoring with Robot Teams. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2015. To appear.

[C10] J. Das, G. Cross, C. Qu, A. Makineni, **P. Tokekar**, Y. Mulgaonkar and V. Kumar. Devices, Systems, and Methods for Automated Monitoring enabling Precision Agriculture. *IEEE International Conference on Automation Science and Engineering (CASE)* 2015. To appear.

[C9] **P. Tokekar**, V. Isler and A. Franchi. Multi-Target Visual Tracking with Aerial Robots. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2014.

[C8] **P. Tokekar** and V. Isler. Polygon Guarding with Orientation. *IEEE International Conference on Robotics and Automation (ICRA)*, 2014.

[C7] **P. Tokekar**, J. Vander Hook, D. Mulla and V. Isler. Sensor Planning for a Symbiotic UAV and UGV System for Precision Agriculture. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2013.

[C6] **P. Tokekar** and V. Isler. Sensor Placement and Selection for Bearing Sensors with Bounded Uncertainty. *IEEE International Conference on Robotics and Automation (ICRA)*, 2013.

[C5] J. Vander Hook, **P. Tokekar** and V. Isler. Cautious Greedy Strategy for Bearing-based Active Localization: Experiments and Theoretical Analysis. *IEEE International Conference on Robotics and Automation (ICRA)*, 2012.

[C4] **P. Tokekar**, J. Vander Hook and V. Isler. Active Target Localization for Bearing Based Robotic Telemetry. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2011.

[C3] **P. Tokekar**, N. Karnad and V. Isler. Energy-Optimal Velocity Profiles for Car-like Robots. *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.

[C2] D. Bhadauria, V. Isler, A. Studenski and **P. Tokekar** (in alphabetical order). A Robotic Sensor Network for Monitoring Carp in Minnesota Lakes. *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.

[C1] **P. Tokekar**, V. Bhatawadekar, D. Fehr and N. Papanikolopoulos. Experiments in Object Reconstruction with a Robot-mounted Laser Range-finder. *17th Mediterranean Conference on Automation and Control*, 2009.

Posters

[P1] J. Vander Hook, **P. Tokekar**, E. Branson, P. A. Plonski and V. Isler. Finding and Localizing Radio-Tagged Carp with an Autonomous Robotic Boat. *142nd Annual Meeting of the American Fisheries Society*, 2012.

Patents

- V. Isler, D. Mulla, **P. Tokekar** and J. Vander Hook. Symbiotic Unmanned Aerial Vehicle and Unmanned Ground Vehicle System. *US Provisional Patent 61/883,602 filed in September 2013*.

Service

- Guest Editor:
  - Special issue on "Active Perception" for Autonomous Robots journal.
  - Special issue on "Robotics in Agriculture" for Journal of Field Robotics.
- Co-organizer: Full day Workshop on Robotics in Agriculture, ICRA 2015.
- Program Committee:
  - IEEE International Symposium on Safety, Security, and Rescue Robotics, 2015.
  - ACM Symposium on Applied Computing, Track on Intelligent Robots and Multi-Agent Systems, 2015.
  - AgriControl2016: The 5th IFAC Conference on Sensing, Control and Automation Technologies for Agriculture, 2016.
  - Second Workshop on Robotic Sensor Networks, part of Cyber-Physical Systems week, 2015.
- Session Co-Chair: ICRA 2012.
- Reviewer:

- Proposal reviewer for the National Science Foundation
- *Journals:* IEEE Transactions on Robotics, IEEE Robotics & Automation Magazine, IEEE Transactions on Automation Science & Engineering, IEEE/ACM Transactions on Networking, IEEE Journal on Selected Areas in Communication, IEEE Transactions on Parallel and Distributed Systems, Autonomous Robots, International Journal of Advanced Robotic Systems, Elsevier Adhoc Networks, Information Processing Letters.
- *Conferences:* IEEE/RSJ International Conference on Intelligent Robots and Systems, IEEE International Conference on Robotics and Automation, IEEE Conference on Automation Science and Engineering, Workshop on Algorithmic Foundations of Robotics, International Symposium on Robotics Research.

- Volunteer: Student Activities at ICRA 2012, Math & Science Family Fun Fair 2011 organized by University of Minnesota.

Invited Seminars/Talks

- *Multi-robot Routing Algorithms for Coverage in Rich Environments.* Invited talk at the "Beyond Geometric Constraints" workshop at ICRA 2015.

- *Systems, Algorithms, and Applications for Robotic Sensing.*

  - Arizona State University, New York University, University of Nebraska-Lincoln, University of Utah, Virginia Tech, Worcester Polytechnic Institute (February–March 2015).

- *Algorithms for Persistent Surveillance in Complex Environments.* Smart Adaptive Reliable Teams for Persistent Surveillance (SMARTS) MURI Annual Review Meeting. MIT (Dec 2014).

- *Sensing Planning for Robotic Environment Monitoring: Systems and Algorithms.*

  - University of Colorado, Boulder (March 2014), University of Pennsylvania (May 2014).

- *Robotic Sensor Networks for Environmental Monitoring.* Invited talk at the "Towards Fully Decentralized Multi-Robot Systems" workshop at ICRA 2013.

Other

- Conference travel awards: ICRA 2011, IROS 2011, ICRA 2013, IROS 2013 (UMN GAPSA), ICRA 2014.

- Professional Membership: IEEE, IEEE Robotics and Automation Society.

Last updated: July 15, 2015