

KARL D. IAGNEMMA

Current Position

Principal Research Scientist
Department of Mechanical Engineering
Massachusetts Institute of Technology
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Education

Massachusetts Institute of Technology, Cambridge, MA
Ph.D., Mechanical Engineering, February 2001
Thesis: *Rough-Terrain Mobile Robot Planning and Control with Application to Planetary Exploration*
Advisor: Prof. Steven Dubowsky
Minor field of study: Fiction writing

Massachusetts Institute of Technology, Cambridge, MA
M.S., Mechanical Engineering, June 1997
Thesis: *Manipulator Identification and Control using a Base-Mounted Force/Torque Sensor*
Advisor: Prof. Steven Dubowsky

University of Dublin, Trinity College, Dublin, Ireland
Curriculum of applied mathematics and English literature

University of Michigan, Ann Arbor, MI
B.S., Mechanical Engineering, *Summa cum laude*, June 1994

Research Interests

Director of the Robotic Mobility Group in the department of Mechanical engineering at MIT. Laboratory research focuses on the modeling, design, control, motion planning, and sensing for robotic systems operating in unstructured environments. Specific applications include planetary exploration rovers, unmanned ground vehicles, orbital robotic systems, manipulators and material handling devices, and surgical robotics.

Academic Positions

Principal Research Scientist	1/06 –
Lecturer	7/04 – 7/05
Research Scientist	2/02 – 1/06

Postdoctoral Researcher *2/01 – 2/02*
Graduate Research Assistant *9/95 – 2/01*
 Department of Mechanical Engineering
 Massachusetts Institute of Technology, Cambridge, USA

Visiting Researcher *9/06 – 9/07*
 Department of Mechanical Engineering
 National Technical University of Athens, Athens, Greece

Visiting Researcher *9/98 – 12/98*
 Science and Technology Development Section
 NASA Jet Propulsion Laboratory, Pasadena, USA

Grants and Awards

2009 Conference on Field and Service Robotics, FSR '09
U.S. Army Research Office *\$10k 4/08 – 9/09*
 Principal Investigator

SQUISHBot (Soft QUIet SHape-shifting robot)
Defense Advanced Research Projects Agency (DARPA) *\$175k 1/08 – 7/09*
 Co-Investigator, with A. Hosoi (PI), G. McKinley, and M. Culpepper

Self-Supervised Mobility-Based Terrain Classification for Unmanned Ground Vehicles
U.S. Army Research Office *\$450k 9/07 – 9/10*
 Principal Investigator

A Unified Approach to Sensor-Based Terrain Characterization and UGV Mobility Prediction
U.S. Army Research Office *\$50k 9/07 – 3/08*
 Principal Investigator

Efficient Stochastic Mobility Prediction for Mobile Robotic Systems
U.S. Army Research Office *\$50k 9/07 – 3/08*
 Principal Investigator

Mobility-Dependent Motion Planning for High Speed Robotic Vehicles
U.S. Army Research Office *\$250k 9/07 – 9/08*
 Principal Investigator, with E. Frazzoli (Co-I)

Lookahead Control and Sensing for Active Navigation and Hazard Avoidance
Ford Motor Company *\$450k 9/07 – 9/10*
 Principal Investigator

Workshop on Mobility and Control in Challenging Environments
U.S. Army Research Office *\$15k 9/06 – 9/07*
 Principal Investigator

Microbots for Large-Scale Planetary Surface and Subsurface Exploration
 NASA Institute for Advanced Concepts \$400k 9/05 – 9/07
 Co-Investigator, with S. Dubowsky (PI) and P. Boston

Navigation and Hazard Avoidance for High Speed Unmanned Ground Vehicles in Rough Terrain
 U.S. Army Research Office \$328k 4/05 – 4/08
 Co-Investigator, with S. Dubowsky (PI)

Reinforcement Learning for Dynamic Vehicle Control
 DARPA (with Stanford Univ.) \$227k 10/04 – 5/06
 Co-Investigator, with S. Dubowsky (PI), S. Thrun, and A. Ng

Multi-Sensor Terrain Classification and Terrain-Adaptive Navigation for Rovers in Very Rough Terrain
 NASA Mars Technology Program (with JPL) \$600k 9/04 – 9/07
 Co-Investigator, with S. Dubowsky (PI), L. Matthies, and D. Helmick

Sensing and Control For Improved Vehicle Stability
 Ford Motor Company \$450k 9/04 – 9/07
 Co-Investigator, with S. Dubowsky (PI)

Model-Based Control of High-Speed Rough-Terrain Robotic Vehicles
 DARPA and U.S. Army TARDEC \$625k 3/01 – 3/05
 Co-Investigator, with S. Dubowsky (PI)

Microbots for Large-Scale Planetary Surface and Subsurface Exploration
 NASA Institute for Advanced Concepts \$75k 10/03 – 4/04
 Co-Investigator, with S. Dubowsky (PI) and P. Boston

On-Line Terrain Characterization and Traversability Assessment for Mars Rovers
 NASA Jet Propulsion Laboratory \$499k 5/01 – 5/04
 Co-Investigator, with S. Dubowsky (PI)

Teaching Experience

Course assistant

2.007: Design and Manufacturing I Spring 1997
 Massachusetts Institute of Technology
 Department of Mechanical Engineering

Honors and Awards

Winner, APEX Grand Award for Writing, for *Journal of Field Robotics* special issue on the DARPA Grand Challenge 2007
 Best Paper Award Bronze Medal, 25th Army Science Conference 2006
 Nominee, MacArthur Foundation Fellowship 2005

Chosen as one of the “top 10 innovative young scientists ” by <i>Red Herring</i> magazine	2005
Chosen as one of 16 people who “redefined science in 2003” by <i>SEED</i> magazine	2003
National Science Foundation Graduate Research Fellowship	1995-1998
Rotary Foundation International Ambassadorial Scholarship	1995
University of Michigan Distinguished Undergraduate Achievement Commendation (first in class)	1994
Dow Chemical Scholar	1994
General Motors Scholar	1992-1994

Academic Activities

Conference Session Chair or Co-Chair

IEEE International Conference on Robotics and Automation	2007
SPIE Conference on Unmanned Ground Vehicles	2003–

Conference Program Committee Participation

IEEE International Conference on Robotics and Automation	2006
Robotics: Science and Systems	2006–
International Conference on Advanced Robotics	2005
SPIE Conference on Unmanned Systems Technology	2003–

Technical Committee Participation

IEEE Robotics and Automation Society, Space Robotics Technical Committee	2007–
International Society of Terrain-Vehicle Systems, Planetary & Terrestrial Rovers Technical Group	2007–

Workshop and Conference Organization

Co-Organizer, Workshop on the 2007 DARPA Urban Challenge, at the 2008 IEEE International Conference on Robotics and Automation, Pasadena, CA	2008
Co-Chair, Conference on Field and Service Robotics, FSR '09, New York, NY	2007–
General Chair, ARO Workshop on Mobility and Control in Challenging Environments, Olin College, Needham MA	2006

Editorial Service

IEEE Transactions on Robotics—Associate Editor	2007–
Journal of Terramechanics—Guest co-Editor, special issue on Robots in Natural Terrain	2007
Journal of Field Robotics—Guest co-Editor, special issue on the 2007 DARPA Urban Challenge	2007–
Journal of Field Robotics, Associate Editor	2006–
Journal of Field Robotics—Guest co-Editor, special issue on the 2005 DARPA Grand Challenge	2006

Peer Review—Journal Publications

ASME Journal of Mechanisms and Robotics
IEEE/ASME Transactions on Mechatronics
IEEE Transactions on Automation Science and Engineering
IEEE Transactions on Control Systems Technology
IEEE Transactions on Robotics
IEEE Transactions on Systems, Man, and Cybernetics
International Journal of Robotics and Automation
International Journal of Robotics Research
Journal of Autonomous Robots
Journal of Field Robotics
Journal of Mechanism and Machine Theory
Journal of Terramechanics
Planetary and Space Science
Robotica
Vehicle System Dynamics

Peer Review—Conference Proceedings

ASME Dynamic Systems and Control Conference
ASME Mechanisms and Robotics Conference
ASME Vibration and Noise Conference
IEEE Conference on Decision and Control
IEEE International Conference on Intelligent Robots and Systems
IEEE International Conference on Multisensor Fusion and Integration for
Intelligent Systems
IEEE International Conference on Robotics and Automation
International Conference on Advanced Robotics
International Conference on Advances in Robot Kinematics
Robotics: Science and Systems

Peer Review—Books and Book Proposals

Marshall Cavendish Benchmark Publishers
Wiley-Interscience Publishers

Peer Review—Proposal Evaluation

American Institute of Biological Sciences
Austrian Science Fund
NASA
National Research Foundation of Singapore
University of Nebraska—Lincoln
U.S. Army Medical Research and Materiel Command
U.S. Army Research Office
U.S. Civilian Research and Development Foundation

Academic Affiliations

IEEE
Sigma Xi

Invited Lectures

- “Mobile Robots in Challenging Environments: State of the Art and Technical Frontiers,” U.S. Army Tank-Automotive Research, Development, and Engineering Center, September, 2007
- “Robotic Terrain Surveying and Probabilistic Mobility Prediction,” U.S. Army Engineer Research and Development Center, July, 2006
- “Modeling, Sensing, and Control of Mobile Robots in Challenging Environments,” Army Cold Regions Research and Engineering Laboratory, February, 2006
- “Modeling, Analysis, and Sensing Methods for Passenger Vehicle Tripped Rollover,” Ford Motor Company, October, 2005
- “Next Generation Space Robotics Research,” Northeastern University, February, 2005
- “Navigation and Hazard Avoidance for High-Speed Mobile Robots in Rough Terrain,” University of Nebraska-Lincoln, November, 2004
- “Sensing and Control for Tripped Rollover Mitigation,” Ford Motor Company, May, 2004
- “Next Generation On-Orbit, Surface, and Sub-Surface Robotic Systems,” NASA/MIT Workshop on Transformational Technologies, December, 2003

Publications

Theses

- Iagnemma, K.**, *Rough-Terrain Mobile Robot Planning and Control, with Application to Planetary Exploration*, Ph.D. Thesis, Massachusetts Institute of Technology, Cambridge, MA, 2001
- Iagnemma, K.**, *Manipulator Identification and Control Using a Base-Mounted Force/Torque Sensor*, Master's Thesis, Massachusetts Institute of Technology, Cambridge, MA, 1997

Books and Monographs

- Buehler, M., **Iagnemma, K.**, and Singh, S., (eds.) *The 2005 DARPA Grand Challenge: The Great Robot Race*, Springer Tracts in Advanced Robotics (STAR) Series, Volume 36, Springer, September, 2007
- Iagnemma, K.**, and Dubowsky, S., *Mobile Robots in Rough Terrain: Estimation, Motion Planning, and Control with application to Planetary Rovers*, Springer Tracts in Advanced Robotics (STAR) Series, Volume 12, Springer, June 2004

Refereed Journal Publications

- Udengaard, M., and **Iagnemma, K.**, “Analysis, Design, and Control of an Omnidirectional Mobile Robot in Rough Terrain,” submitted to the *IEEE/ASME Transactions on Mechatronics*

Ward, C., and **Iagnemma, K.**, “Speed Independent Vibration-Based Terrain Classification for Passenger Vehicles,” submitted to *Vehicle System Dynamics*

Peters, S., and **Iagnemma, K.**, “Stability Measurement of High Speed Vehicles on Sloped and Rough Terrain,” submitted to *Vehicle System Dynamics*

Ward, C., and **Iagnemma, K.**, “A Dynamic Model-Based Wheel Slip Detector for Mobile Robots on Outdoor Terrain,” accepted for publication in the *IEEE Transactions on Robotics*

Halatci, I., Brooks, C., and **Iagnemma, K.**, “Visual and Tactile Terrain Classification and Classifier Fusion for Planetary Exploration Rovers,” accepted for publication in *Robotica*

Rentschler, M., Farritor, S., **Iagnemma, K.**, “Mechanical Design of Robotic *in vivo* Wheeled Mobility,” *ASME Journal of Mechanical Design*, Vol. 129, No. 10, pp. 1037-1045, October, 2007

Shimoda, S., Kuroda, Y., **Iagnemma, K.**, “Potential Field Navigation of High Speed Vehicles on Rough Terrain,” *Robotica*, Vol. 25, No. 4, pp 409-424, July 2007

Rentschler, M., Dumpert, J., Platt, S., **Iagnemma, K.**, Oleynikov, D., Farritor, S., “An *in vivo* Mobile Robot for Surgical Vision and Task Assistance,” *ASME Journal of Medical Devices*, Vol. 1, No. 1, pp. 23-29, March, 2007

Siddiqi, A., De Weck, O., and **Iagnemma, K.**, “Reconfigurability in Planetary Surface Vehicles: Modeling Approaches and Case Study,” *Journal of the British Interplanetary Society*, Vol. 59, December, 2006

Brooks, C., **Iagnemma, K.**, and Dubowsky, S., “Visual Wheel Sinkage Measurement for Mobile Robot Mobility Characterization,” *Autonomous Robots*, Volume 21, Number 1, pp. 55-64, August, 2006

Spenko, M., Kuroda, Y., Dubowsky, S., and **Iagnemma, K.**, “Hazard Avoidance for High Speed Unmanned Ground Vehicles in Rough Terrain,” *Journal of Field Robotics*, Volume 23, No. 5, pp. 311-331, May, 2006

Rentschler, M., Dumpert, J., Platt, S., **Iagnemma, K.**, Oleynikov, D., Farritor, S., “Modeling, Analysis, and Experimental Study of *In Vivo* Wheeled Mobility,” *IEEE Transactions on Robotics*, Volume 22, No. 2, pp. 308-321, April, 2006

Brooks, C., **Iagnemma, K.**, “Vibration-based Terrain Classification for Planetary Exploration Rovers,” *IEEE Transactions on Robotics*, Volume 21, Number 6, pp. 1185-1191, December 2005

Shibly, H., **Iagnemma, K.**, and Dubowsky, S., “An Equivalent Soil Mechanics Formulation for Rigid Wheels in Deformable Terrain, with Application to Planetary Exploration Rovers,” *Journal of Terramechanics*, Volume 42, Number 1, pp. 1-13, January 2005

Iagnemma, K., and Dubowsky, S., “Traction Control of Wheeled Robotic Vehicles with Application to Planetary Rovers,” *International Journal of Robotics Research*, Volume 23, Number 10, pp. 1029-1040, October 2004

Iagnemma, K., Kang, S., Shibly, H., and Dubowsky, S., “On-Line Terrain Parameter Estimation for Planetary Rovers,” *IEEE Transactions on Robotics and Automation*, Volume 20, Number 5, pp. 921-927, October 2004

Iagnemma, K., Rzepniewski, A., Dubowsky, S., and Schenker, P., “Control of Robotic Vehicles with Actively Articulated Suspensions in Rough Terrain,” *Autonomous Robots*, Volume 14, Number 1, pp. 5-16, January 2003

Morel, G., **Iagnemma, K.**, and Dubowsky, S., “The Precise Control of Manipulators Using Base Force/Torque Sensing,” *Automatica: The Journal of the International Federation of Automatic Control*, Volume 36, Number 7, pp. 931-941, 2000

Book Chapters

Iagnemma, K., “Terrain Estimation Methods for Enhanced Autonomous Rover Mobility,” *Intelligence for Space Robotics*, TSI Press, July, 2006

Refereed Conference Proceeding Publications

Brooks, C., and **Iagnemma, K.**, “Visual Detection of Novel Terrain via Two-Class Classification,” submitted to the *IEEE International Conference on Robots and Systems, IROS '08*, 2008

Kewlani, G., and **Iagnemma, K.**, “A Stochastic Response Surface Approach to Statistical Prediction of Robotic Mobility,” submitted to the *IEEE International Conference on Robots and Systems, IROS '08*, 2008

Peters., S., and **Iagnemma, K.**, “Mobile robot path tracking of aggressive maneuvers on sloped terrain,” submitted to the *IEEE International Conference on Robots and Systems, IROS '08*, 2008

Brooks, C., and **Iagnemma, K.**, “Visual Detection of Novel Terrain via Two-Class Classification,” submitted to the *IEEE International Conference on Robots and Systems, IROS '08*, 2008

Iagnemma, K., Shimoda, S., and Shiller, Z., “Near-Optimal Navigation of High Speed Mobile Robots on Uneven Terrain,” submitted to the *IEEE International Conference on Robots and Systems, IROS '08*, 2008

Tadakuma, K., Tadakuma, R., Nagatani, K., Yoshida, K., and **Iagnemma, K.**, “Crawler Mechanism with Circular Section, to Realize a Sideling Motion,” submitted to the *IEEE International Conference on Robots and Systems, IROS '08*, 2008

Kewlani, G., and **Iagnemma, K.**, “Mobility Prediction for Unmanned Ground Vehicles in Uncertain Environments,” *Proceedings of the SPIE Conference on Unmanned Systems Technology*, 2008

Udengaard, M., and **Iagnemma, K.**, “Design of a Highly Maneuverable Wheeled Mobile Robot,” *Proceedings of the SPIE Conference on Unmanned Systems Technology*, 2008

Rohde, M., Perlin, V., **Iagnemma, K.**, Lupa, M., Rohde, S., Overholt, J., Fiorani, G., “PointCom: Semi-Autonomous UGV Control with Intuitive Interface,” *Proceedings of the SPIE Conference on Unmanned Systems Technology*, 2008

Helmick, D., Angelova, A., Matthies, L., Brooks, C., Halatci, I., Dubowsky, S., **Iagnemma, K.**, “Experimental Results from a Terrain Adaptive Navigation System for Planetary Rovers,” to appear in the *Proceedings of the Ninth International Symposium on Artificial Intelligence, Robotics and Automation in Space, i-SAIRAS*, 2008

Udengaard, M., and **Iagnemma, K.**, “Design of an Omnidirectional Mobile Robot for Rough Terrain,” to appear in the *Proceedings of the IEEE International Conference on Robotics and Automation*, 2008

Udengaard, M., and **Iagnemma, K.**, “Kinematic Analysis and Control of an Omnidirectional Mobile Robot in Rough Terrain,” *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2007

Halatci, I., Brooks, C., and **Iagnemma, K.**, “Terrain Classification and Multi-Classifer Fusion Using Visual and Tactile Sensing for Planetary Rovers,” *Proceedings of the IEEE Aerospace Conference*, 2007

Brooks, C., and **Iagnemma, K.**, “Self-Supervised Classification for Planetary Rover Terrain Sensing,” *Proceedings of the IEEE Aerospace Conference*, 2007

Ward, C., and **Iagnemma, K.**, “Classification-Based Wheel Slip Detection and Detector Fusion for Outdoor Mobile Robots,” *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 2730-2735, 2007

Ward, C., and **Iagnemma, K.**, “Model-Based Wheel Slip Detection for Outdoor Mobile Robots,” *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 2724-2729, 2007

Spenko, M., Overholt, J., and **Iagnemma, K.**, “High Speed Hazard Avoidance for Unmanned Ground Vehicles in Emergency Situations,” *Proceedings of the 25th Annual Army Science Conference*, 2006

Best paper award, Unmanned Vehicles session

Runner-up, best conference paper award

Spenko, M., Dubowsky, S., and **Iagnemma, K.**, “Experimental Validation of High Speed Hazard Avoidance Control for Unmanned Ground Vehicles,” *Proceedings of the 8th International IFAC Symposium on Robot Control, SYROCO*, 2006

Peters, S., and **Iagnemma, K.**, “An Analysis of Rollover Stability Measurement for High-Speed Mobile Robots,” *IEEE International Conference on Robotics and Automation*, pp. 3711-3716, 2006

Rentschler, M., Dumpert, J., Platt, S., Oleynikov, D., Farritor, S., and **Iagnemma, K.**, “Mobile *In Vivo* Biopsy Robot,” *IEEE International Conference on Robotics and Automation*, pp. 4155-4160, 2006

Brooks, C., **Iagnemma, K.**, and Dubowsky, S., “Vibration-based Terrain Analysis for Mobile Robots,” *IEEE International Conference on Robotics and Automation*, pp. 3415-3420, 2005

Shimoda, S., Kuroda, Y., and **Iagnemma, K.**, “Potential Field Navigation of High Speed Vehicles on Rough Terrain,” *IEEE International Conference on Robotics and Automation*, pp. 2828-2833, 2005

Dubowsky, S., **Iagnemma, K.**, Liberatore, S., Lambeth, D., Plante, J. and Boston, P., “A Concept Mission: Microbots for Large-Scale Planetary Surface and Subsurface Exploration,” *Proceedings of the Space Technology and Applications International Forum (STAIF)*, pp. 1449-1459, 2005

Rentschler, M., Dumpert, J., Hadzialic, A., Platt, S., Farritor, S., Oleynikov, D., and **Iagnemma, K.**, “Theoretical and Experimental Analysis of In Vivo Wheeled Mobility,” *Proceedings of the 2004 ASME Design Engineering Technical Conference*, pp. 1241-1249, 2004

Spenko, M., **Iagnemma, K.**, and Dubowsky, S., “High Speed Hazard Avoidance for Mobile Robots in Rough Terrain,” *Proceedings of the 2004 SPIE Conference on Unmanned Ground Vehicles*, pp. 439-450, 2004

Golda, D., **Iagnemma, K.**, and Dubowsky, S., “Probabilistic Modeling and Analysis of High-Speed Rough-Terrain Mobile Robots,” *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 914-919, 2004

Iagnemma, K., Brooks, C., Dubowsky, S., “Visual, Tactile, and Vibration-Based Terrain Analysis for Planetary Rovers,” *Proceedings of the IEEE Aerospace Conference*, pp. 841-848, 2004

Schenker, P., Huntsberger, T., Pirjanian, Dubowsky, S., **Iagnemma, K.**, Sujun, V., “Rovers for Agile, Intelligent Traverse of Challenging Terrain,” *Proceedings of the 11th International Conference on Advanced Robotics*, pp. 1683-1692, 2003

Iagnemma, K., Kang, S., Brooks, C., and Dubowsky, S., “Multi-Sensor Terrain Estimation for Planetary Rovers,” *Proceedings of the Seventh International Symposium on Artificial Intelligence, Robotics and Automation in Space, i-SAIRAS*, 2003

Iagnemma, K., Golda, D., Spenko, M., and Dubowsky, S., “Experimental Study of High-Speed Rough-Terrain Mobile Robot Models for Reactive Behaviors,” *Proceedings of the Eighth International Symposium on Experimental Robotics, ISER '02*, pp. 654-663, 2002

Iagnemma, K., and Dubowsky, S., “Terrain Estimation for High-Speed Rough-Terrain Autonomous Vehicle Navigation,” *Proceedings of the SPIE Conference on Unmanned Ground Vehicle Technology IV*, pp. 256-266, 2002

Iagnemma, K., Shibly, H., and Dubowsky, S., “On-Line Terrain Parameter Estimation for Planetary Rovers,” *Proceedings of the IEEE International Conference on Robotics and Automation*, pp. 3142-3147, 2002

Schenker, P., Huntsberger, T., Pirjanian, P., Baumgartner, E., Aghazarian, H., Trebi-Ollennu, A., Leger, P., Cheng, Y., Backes, P., Tunstel, E., Dubowsky, S., **Iagnemma, K.**, McKee, G., "Robotic Automation for Space: Planetary Surface Exploration, Terrain-Adaptive Mobility, and Multi-Robot Cooperative Tasks," *Proceedings of the SPIE Symposium on Intelligent Robots and Computer Vision XX*, Volume 4572, pp. 12-28, 2001

Iagnemma, K., Shibly, H., Rzepniewski, A., and Dubowsky, S., “Planning and Control Algorithms for Enhanced Rough-Terrain Rover Mobility,” *Proceedings of the Sixth International Symposium on Artificial Intelligence, Robotics and Automation in Space, i-SAIRAS*, 2001

Schenker, S., Pirjanian, P., Balaram, B., Ali, K., Trebi-Ollennu, A., Huntsberger, T., Aghazarian, H., Kennedy, A., Baumgartner, E., **Iagnemma, K.**, Rzepniewski, A., Dubowsky, S., Leger, P., Apostolopoulous, A., McKee, G., “Reconfigurable Robots for All-Terrain Exploration,” *Proceedings of the SPIE Symposium on Sensor Fusion and Decentralized Control*, Volume 4196, pp. 454-468, 2000

Iagnemma, K., Rzepniewski, A., Dubowsky, S., Huntsberger, T., Schenker, P., “Mobile Robot Kinematic Reconfigurability for Rough-Terrain,” *Proceedings of the SPIE Symposium on Sensor Fusion and Decentralized Control*, pp. 413-420, 2000

Iagnemma, K., and Dubowsky, S., “Vehicle Wheel-Ground Contact Angle Estimation: with Application to Mobile Robot Traction Control,” *7th International Symposium on Advances in Robot Kinematics, ARK '00*, pp.137-146, 2000

Iagnemma, K., and Dubowsky, S., “Mobile Robot Rough-Terrain Control (RTC) for Planetary Exploration,” *Proceedings of the 26th ASME Biennial Mechanisms and Robotics Conference, DETC 2000*, pp. 1429-1436, 2000

Huntsberger, T, Baumgartner, E., Aghazarian, H., Cheng, Y., Schenker, P., Leger, P., **Iagnemma, K.**, and Dubowsky, S., “Sensor Fused Autonomous Guidance of a Mobile Robot and Applications to Mars Sample Return Operations,” *Proceedings of the SPIE Symposium on Sensor Fusion and Decentralized Control*, Volume 3839, pp. 2-8, 1999

Iagnemma, K., Burn, R., Wilhelm, E., and Dubowsky, S., “Experimental Validation of Physics-Based Planning and Control Algorithms for Planetary Robotic Rovers,” *Proceedings of the Sixth International Symposium on Experimental Robotics, ISER '99*, pp. 319-328, 1999

Iagnemma, K., Genot, F., and Dubowsky, S., “Rapid Physics-Based Rough-Terrain Rover Planning with Sensor and Control Uncertainty,” *Proceedings of the 1999 IEEE International Conference on Robotics and Automation*, pp. 2286 -2291, 1999

Meggiolaro, M., Jaffe, P., **Iagnemma, K.**, and Dubowsky, S., “A Force-Updated Kinematic Virtual Viewing System With Application To Nuclear Power Plant Maintenance,” *Proceedings of the Tenth World Congress on the Theory of Machines and Mechanisms, IFToMM '99*, pp. 1288-1294, 1999

Liu, G., **Iagnemma, K.**, Dubowsky, S. and Morel, G., “A Base Force/Torque Sensor Approach to Robot Manipulator Inertial Parameter Estimation,” *Proceedings of the 1998 IEEE International Conference on Robotics and Automation*, pp. 3316-3321, 1998

Iagnemma, K., Morel, G. and Dubowsky, S., “A Model-Free Fine Position Control Method Using the Base-Sensor: with Application to a Hydraulic Manipulator,” *Proceedings of the Fifth IFAC Symposium on Robot Control: SYROCO '97*, pp. 359-365, 1997

Technical Reports

Iagnemma, K., *A Laboratory Single Wheel Testbed for Studying Planetary Rover Wheel-Terrain Interaction*, Technical Report 01-05-05, Field and Space Robotics Laboratory, Massachusetts Institute of Technology, Cambridge, MA, 2005

Thesis Committee Service

Dean Anderson, Carnegie Mellon University, Ph.D., 2010 (*expected*)

Steven Peters, MIT, Ph.D., 2009 (*expected*)

Christopher Brooks, MIT, Ph.D., 2008 (*expected*)

Kyu-Jin Cho, MIT, Ph.D, 2007

Mark Rentschler, University of Nebraska–Lincoln, Ph.D., 2006

Matthew Spenko, MIT, Ph.D, 2005

Students Supervised or co-Supervised

Sterling Anderson, MIT, MS, 2009 (*expected*)

Gaurav Kewlani, MIT, MS, 2009 (*expected*)

Nadia Cheng, MIT, MS, 2009 (*expected*)

Steven Peters, MIT, MS, 2006, Ph.D., 2009 (*expected*)

Christopher Brooks, MIT, MS, 2004, Ph.D., 2008 (*expected*)

Martin Udengaard, MIT, MS, 2008

Christopher Ward, MIT, MS, 2007

Stefan Campbell, MIT, MS, 2007 (co-supervisor)

Ibrahim Halatci, MIT, MS, 2006

Matthew Spenko, MIT, MS, 2003, Ph.D., 2005

Shingo Shimoda, University of Tokyo, Ph.D., 2005 (one year visiting student)

Shinwoo Kang, MIT, MS, 2003

Dariusz Golda, MIT, MS, 2003

Personal Activities

Internationally published author of fiction. Short story collection, *On the Nature of Human Romantic Interaction*, published by the Dial Press, 2003.

Novel, *The Expeditions*, published by the Dial Press, 2008. Major awards for fiction include grants from the National Endowment for the Arts and the Massachusetts Cultural Council, inclusion in *The Best American Short Stories* anthology, Pushcart Prize, *Paris Review* Plimpton Prize, finalist for National Magazine Award. Translations into Chinese, Japanese, Korean, Farsi, Italian, French. Guest instructor and visiting speaker at various national and international writing conferences.