

Seth Hutchinson

Curriculum Vitae

ADDRESS

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CURRENT POSITION

Professor and KUKA Chair for Robotics, School of Interactive Computing
Associate Director, Institute for Robotics and Intelligent Machines
—*Georgia Institute of Technology*, 2018-present

EDUCATION

Ph.D. Electrical Engineering, Purdue University, Dec. 1988
Master of Science, Electrical Engineering, Purdue University, Dec. 1984
Bachelor of Science, Electrical Engineering, Purdue University, May 1983

OTHER POSITIONS

At the University of Illinois at Urbana-Champaign

- Jan, 2018-present: *Professor Emeritus of Electrical and Computer Engineering*
- 2003-2017: *Professor of Electrical and Computer Engineering; Research Professor, Beckman Institute and Coordinated Science Laboratory*
- 2001-2007: *Associate Head for Undergraduate Affairs, Electrical and Computer Engineering*
- 1996-2003: *Associate Professor of Electrical and Computer Engineering; Research Assc. Professor, Beckman Institute and Coordinated Science Laboratory*
- 1990-1996: *Assistant Professor of Electrical and Computer Engineering; Research Asst. Professor, Beckman Institute and Coordinated Science Laboratory*

Visiting Positions and Sabbatical Leaves

- July, 2017: Università di Roma “La Sapienza”, Rome, Italy: *Visiting Professor*
- Sep-Dec, 2013: Università di Roma “La Sapienza”, Rome, Italy: *Visiting Professor*
- Oct, 2011: Tecnológico de Monterrey, Campus of Guadalajara: *Visiting Professor*
- Jun, 2008: L’Institut Français Mécanique Avancée, Clermont-Ferrand, France: *Visiting Professor*
- Sep-Oct, 2007: Université de Rennes I, Rennes France: *Invited Professor*
- Jun 2005: Tecnológico de Monterrey, Campus Estado de México: *Visiting Professor*
- Jan, 2005: The Australian National University: *Visiting Fellow*
- 1997-1998: Ecole Nationale Supérieure des Télécommunications, Paris, France: *Visiting Professor*
- 1989: Purdue University: *Visiting Assistant Professor of Electrical Engineering*

RESEARCH INTERESTS

Robotics: Vision-based control, motion planning, planning under uncertainty, pursuit-evasion, localization and mapping, locomotion, bio-inspired robotics

TEACHING

- **Courses Developed, University of Illinois:**
 - ◊ ECE 550 Advanced Robotic Planning
 - ◊ ECE 470 Introduction to Robotics (with Professors Spong and Ahuja)
 - ◊ ECE 379 Robot Sensing (with Professor Ahuja)
- **Course Instructor, University of Illinois:**
 - ◊ Introduction to Robotics (ECE 470)
 - ◊ Advanced Robotic Planning (ECE 550)
 - ◊ Control Systems (ECE 486)
 - ◊ Control System Theory and Design (ECE 515)
 - ◊ Introduction to Optimization (ECE 490)
 - ◊ Senior Design Laboratory (ECE 445)
 - ◊ Introduction to Computing Systems (ECE 190)
 - ◊ Analog Signal Processing (ECE 210)
 - ◊ Computer Engineering I (ECE 290)
 - ◊ Probability with Engineering Applications (ECE 313)
 - ◊ Logic Design (ECE 462)
 - ◊ Engineering Ethics (ECE 316)
- **Tutorials**
 - ◊ “Visual Servo Control,” 9th Summer School on Image and Robotics 2008, IFMA, Campus des Cezeaux, France
 - ◊ “Visual Servo Control,” Centro de Investigación en Matemáticas, Guanajuato, Mexico (Feb. 2008)
 - ◊ “Visual Servo Control,” IEEE Int’l Conf. on Robotics and Automation, 1996
 - ◊ “Multisensor Fusion Under Uncertainty: Bayes Methods and the Dempster-Shafer Theory,” given at the IEEE Int’l Conf. on Multisensor Fusion and Integration for Intelligent Systems, 1994
- **Short Courses:**
 - ◊ Underactuated Robots, Università di Roma “La Sapienza”, Rome, Italy, Winter, 2016.
 - ◊ Probabilistic Methods in Robotics, Università di Roma “La Sapienza”, Rome, Italy, Fall, 2013.
 - ◊ Lectures on visual servo control and path planning at the Dutch Institute of Systems and Control (DISC) Summer School on Dynamics and Control Methods for Medical Robotics, June, 2011.
 - ◊ “Visual Servo Control,” Centro de Investigación en Matemáticas, Guanajuato, Mexico (Aug. 2009)
 - ◊ “Visual Servo Control,” Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV, Saltillo, Mexico, (Feb. 2009)
 - ◊ *Robot Motion Planning*, a four week graduate course given at the Tecnológico de Monterrey, Campus Estado de México, June 2005
 - ◊ *Robotics and Computer Vision*, a three day short course offered through the Office of Continuing Engineering Education at the University of Illinois, Summer 1993 (with Professor Ponce)

PROFESSIONAL ACTIVITIES

• Editorships

- ◇ Editorial Board, *International Journal of Robotics Research*, 2005-present
- ◇ Advisory Editorial Board, *Journal of Intelligent Service Robotics*, 2014-present
- ◇ Editor-in-Chief, *IEEE Transactions on Robotics*, 2008-2013
- ◇ Founding Editor-in-Chief, Conference Editorial Board, IEEE Robotics and Automation Society 2006-2008
- ◇ Editorial Board, *Journal of Intelligent Service Robotics*, 2005-2014
- ◇ Editor, *IEEE Transactions on Robotics and Automation*, 2000-2005
- ◇ Associate Editor, *IEEE Transactions on Robotics and Automation* 1997-2000
- ◇ Guest Editor, *International Journal of Computer Vision* and *International Journal of Robotics Research*: Joint Special Issue on *Vision and Robotics*, Nov., 2007
- ◇ Guest Editor, *International Journal of Robotics Research*, Jul.-Aug. 2004
- ◇ Guest Editor, *IEEE Transactions on Robotics and Automation*, Special section on visual servo control, October 1996

• IEEE Robotics and Automation Society, Offices and Committees

- ◇ Member of the AdCom, 2006-2009, 2014-2016, 2017-present (at-large member)
- ◇ Member, Conference Activities Board (CAB), 2016-present
- ◇ Associate Vice President for Conference Technical Programs, 2016-present
- ◇ Chair of the Steering Committee of *IEEE Robotics and Automation Letters*, 2015-present
- ◇ Co-Chair, Awards Committee, 2018-present
- ◇ Chair, Awards Evaluation Committee, 2018-present
- ◇ Member of the Publications Activities Board (PAB), 2008-present
- ◇ Member of the ad hoc Committee on New Publication Strategies, 2014-2016
- ◇ Director, IEEE RAS Young Reviewers Program, 2015-2018
- ◇ Member of the Electronic Publications and Services Board, 2014-2015
- ◇ Member of the IEEE Fellow Nomination Committee, 2012-2015
- ◇ Chair, IEEE Fellow Nomination Committee, 2016, 2017
- ◇ Member of the search committee: Editor-in-Chief of *IEEE Robotics and Automation Letters*, 2015
- ◇ Member of the Nomination Committee for the George Saridis Leadership Award, 2017
- ◇ Member of the Nomination Committee for the IEEE RAS Distinguished Service Award, 2017
- ◇ Co-Chair, Evaluation Panel for the George Saridis Leadership Award in Robotics and Automation, 2014, 2015
- ◇ Co-Chair, Evaluation Panel for the IEEE RAS Distinguished Service Award, 2014, 2015
- ◇ Member of the Pioneer in Robotics and Automation Award Nomination Committee, 2014, 2015
- ◇ Co-chair of the Pioneer in Robotics and Automation Award Nomination Committee, 2013
- ◇ Member of the Financial Activities Board (FAB), 2008-2013
- ◇ Member of the Technical Activities Board (TAB), 2008-2013
- ◇ Member of the Steering Committee for Technical Programs (SCTP), 2006-2009
- ◇ Associate Vice President for Publications, 2005-2006
- ◇ Member of the Conference Board and the Member Services Committee, 2005-2007
- ◇ Member of the ad hoc committee to rename and redefine the scope of the *IEEE Transactions on Robotics and Automation*, 2002
- ◇ Co-chair, Technical Committee on Computer and Robot Vision, 1992-1996

• IEEE Boards and Committees

- ◇ IEEE Periodicals Review and Advisory Committee (PRAC), 2016-2018
- ◇ Division 10 representative to the IEEE Thesaurus Editorial Board, 2014-2018

- **Conference and Workshop Organization**

- ◇ Steering Committee, *Workshop on the Algorithmic Foundations of Robotics (WAFR)*, 2009-present
- ◇ Program Co-Chair for the Americas, *IEEE Int'l Conf. on Robotics and Automation (ICRA)*, 2016
- ◇ Area Chair, *Robotics: Science and Systems (RSS)*, 2012, 2013, 2017, 2018
- ◇ Program Co-chair, *IEEE Int'l Conf. on Intelligent Robots and Systems (IROS)*, 2015, 2017
- ◇ Program Co-chair for the Americas, *IEEE Int'l Conf. on Intelligent Robots and Systems (IROS)*, 2008, 2014
- ◇ Program Co-chair for America, *13th International Conference on Advanced Robotics*, 2007
- ◇ Co-chair, *Workshop on the Algorithmic Foundations of Robotics*, 2002, 2018
- ◇ Program Vice-chair, *9TH IEEE International Conference on Tools with Artificial Intelligence (IC-TAI97)*, November 1997
- ◇ Co-chair, *IEEE Workshop on Visual Servoing: Achievements, Applications and Open Problems*, San Diego, May 1994

- **Program and Organizing Committees**

- ◇ International Symposium on Medical Robotics, 2019
- ◇ IEEE Conference on Control Technology and Applications, 2017
- ◇ Workshop on the Algorithmic Foundations of Robotics (WAFR): 1994, 2002, 2006, 2008, 2010, 2014, 2016
- ◇ IEEE Int'l Conf. on Intelligent Robots and Systems (IROS): 1992, 1994, 1996, 1998, 2001-2006, 2008-2011, 2019
- ◇ IEEE Int'l Conf. on Robotics and Automation (ICRA): 1994, 1996, 1997 1999-2003, 2005-2006; 2017 (SPC), 2019, 2021 (SPC)
- ◇ IEEE Conf. on Decision and Control (CDC): 2012
- ◇ American Control Conference (ACC): 2011
- ◇ Robotics: Science and Systems (RSS): 2005, 2009, 2014
- ◇ Robotics Challenges and Vision Workshop (held in conjunction with RSS): 2013
- ◇ Int'l Conf. on Pattern Recognition (ICPR): 2002, 2010, 2012
- ◇ IEEE Workshop on Visual Control of Mobile Robots (ViCoMoR): 2011, 2012
- ◇ International Conference on Informatics in Control, Automation and Robotics (ICINCO): 2007
- ◇ International Conference on Control, Automation and Systems (ICCAS): 2007
- ◇ IASTED International Conference on Robotics and Applications: 2007
- ◇ 13th International Conference on Advanced Robotics: 2007
- ◇ SICE-ICASE International Joint Conference: 2006
- ◇ SPIE Conf. on Optomechatronic Systems Control: 2006
- ◇ Int'l Conf. on Computer Vision Theory and Applications (VISAPP): 2006
- ◇ IEEE Int'l Conf. on Multisensor Fusion and Integration for Intelligent Systems (MFI): 1994, 1996, 1999, 2001, 2003, 2006, 2008, 2009
- ◇ IEEE Int'l Conf. on Comp. Vision and Pattern Recognition (CVPR): 1996, 1997, 2000, 2001
- ◇ IEEE Int'l Conf. on Industrial Electronics, Technology & Automation (IETA): 2001
- ◇ Thirty-First International Symposium on Robotics (ISR): 2000
- ◇ SPIE Conf. on Sensor Fusion and Decentralized Control in Autonomous Robotic Sys.: 1997, 1999
- ◇ IEEE Workshop on Perceptual Organization in Computer Vision (held with CVPR): 1998
- ◇ Nat'l Conf. on Artificial Intelligence (AAAI): 1994, 1996
- ◇ Sixth Int'l Symposium on Robotics and Manufacturing (ISRAM): 1996
- ◇ IROS Workshop on Vision for Robots: 1995
- ◇ SPIE Conf. on Neural and Stochastic Methods in Image and Signal Processing: 1992, 1993, 1994
- ◇ The Twelfth Int'l Conf. on Pattern Recognition — Comp. Vision and Applications: 1994
- ◇ SPIE Conf. on Applications of Artificial Intelligence XI: Machine Vision and Robotics: 1993
- ◇ SPIE Conf. on Stochastic Methods in Signal Proc., Image Proc., and Comp. Vision: 1991

- **Reviewer**
 - ◊ **Advanced Center for Electrical and Electronic Engineering (AC3E)**, Chile, member of the International Scientific Committee, 2018
 - ◊ **National Science Foundation** Spring 1994, Fall 1995, Spring 1997, Spring 2002, Winter 2008, Fall 2012, Spring 2014, Spring 2015
 - ◊ **National Institute of Justice**, Standing Scientific Review Panel on Technology, 2013
 - ◊ **NASA**: Spring 1999, Winter 2005, Winter 2006, Fall 2007
 - ◊ **INRIA**: Evaluation of the *control and complex systems* program, Fall 2004
 - ◊ **EU Framework Programme for research and technology development**:
 - Evaluation Panel for Information and Communication Technologies (ICT-2009.2.1 Cognitive Systems and Robotics), 2009, 2010, 2011, 2012, 2013, 2014
 - Site Review Committee: 2012 (TOMSY), 2013 (TOMSY), 2014 (TOMSY, PACMAN), 2015 (PACMAN)
 - ◊ **Journals**: IEEE Trans. on Robotics and Automation, Robotics and Autonomous Systems, International Journal of Robotics Research, IEEE Trans. on Image Processing, IEEE Trans. on Pattern Analysis and Machine Intelligence, IEEE Trans. on Computers, IEEE Trans. on Systems, Man, and Cybernetics, IEEE Computer Magazine, IEEE Control Magazine, Journal of Robotic Systems, ASME Trans. Journal of Engineering for Industry, Computer Vision, Graphics, and Image Processing: Image Understanding, Robotics and Computer-Integrated Manufacturing
 - ◊ **Conferences and Workshops**: dozens of technical conferences and workshops
- **Professional Memberships**: IEEE (Fellow), Robotics Society of India, 2013-present.

INVITED LECTURES, SEMINARS, AND COLLOQUIA

- World Robot Conference, Beijing (*Keynote*, Aug., 2018)
- University College of London (July 2018)
- University of Leeds (July 2018)
- Georgia Institute of Technology (Apr. 2017)
- University of Texas at Dallas (Mar. 2017)
- Robotics Big Bang for Humanity Workshop, Tohoku University, Sendai, Japan (Jan. 2017)
- Istituto Italiano di Tecnologia (IIT), Genoa (Dec. 2016)
- IEEE/RSJ IEEE Int'l Conf. on Intelligent Robots and Systems (*Keynote*, Oct. 2016)
- The 19th International Conference on Climbing and Walking Robots (*Keynote*, Sep. 2016)
- ARL Workshop on Heterogeneity, Diversity and Resilience in Multi-Robot Systems (Aug. 2016)
- IEEE Int'l. Conf. on Robotics and Automation (*Keynote*, May 2016)
- MIT (Apr. 2016)
- Université de Rennes, France (Dec., 2015)
- University of Washington (Dec. 2015)
- Georgia Institute of Technology (Nov. 2015)
- NSF National Robotics Initiative PI meeting (*Keynote*, Nov. 2015)
- Pontificia Universidad Católica de Chile, Santiago, Chile (Nov. 2014)
- Universidad Técnica Federico Santa Maria, Valparaiso, Chile (Nov. 2014)
- Aviation Innovation Conference: Spanning Manned and Unmanned Aviation, U. Illinois (*Plenary*, Nov. 2014)
- Advances in Robotics, Pune, India (*Plenary*, July 2013)
- International Workshop on Recent Developments in Robotics and Control, U. Texas at Dallas (Nov. 2012)
- Georgia Institute of Technology (Nov. 2011)
- Tecnológico de Monterrey, Campus Guadalajara (Oct. 2011)
- Università degli Studi di Pisa, Italy (July, 2011)
- University of Birmingham, England (June 2011)

- Boston University (Feb. 2011)
- 3do Taller en Robótica y Planificación de Movimientos, Guanajuato, Mexico (Nov. 2010)
- Maryland Robotics Center, University of Maryland (Oct. 2010)
- Festschrift for Dick Volz, Texas A&M (Apr. 2010)
- Workshop on Search and Pursuit/Evasion in the Physical World: Efficiency, Scalability, and Guarantees (held with ICRA 2010, May 2010)
- LAAS, Toulouse, France (Sep. 2009)
- FIRA, Incheon, South Korea (*Plenary*, Aug. 2009)
- Centro de Investigación en Matemáticas, Guanajuato, Mexico (Aug. 2009)
- Technical University of Munich, Germany (March 2009)
- Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV, Saltillo, Mexico, (Feb. 2009)
- Int'l. Congress of Mechatronics, Sinergia, Guadalajara, Mexico (*Plenary*, Oct. 2008)
- University of Tennessee (September 2008)
- l'Institut Français de Mécanique Avancée, Clermont-Ferrand, France (June 2008)
- 2do Taller en Robótica y Planificación de Movimientos, Guanajuato, Mexico (Feb. 2008)
- University of Southern California (Nov. 2007)
- Mexican Int'l. Conf. on Artificial Intelligence, Aguascalientes, Mexico (*Plenary*, Nov. 2007)
- GRASP Lab, University of Pennsylvania (May 2007)
- Colloquium on Robotics and Automation, Università Degli Studi di Napoli Federico II, Naples Italy (Dec. 2006)
- LAAS, Toulouse, France (June 2006)
- Dagstuhl Seminar on Form and Content in Sensor Networks, Wadern, Germany (Sep. 2005)
- Tecnológico de Monterrey, Campus Estado de México (June 2005)
- University of Florida (April, 2005)
- The Australian National University (January, 2005)
- Johns Hopkins University (April, 2003)
- Carnegie Mellon University (April, 2002)
- University of Louisville (May, 2001)
- Dagstuhl Seminar on Modelling of Sensor-Based Intel. Robot Sys., Wadern, Germany (Oct. 2000)
- Simon Fraser University, Vancouver, Canada (Sept. 2000)
- Joint EU-US Workshop on Key Research Issues and Opportunities in Motion Planning (July 2000)
- Technical University of Vienna, Austria (November 1999)
- Technical University of Munich, Germany (November 1999)
- Iowa State University (November 1998)
- IRISA/INRIA, Rennes, France (June 1998)
- Technical University of Munich, Germany (June 1998)
- LAAS, Toulouse, France (May 1998)
- Blaise Pascal University, France (June 1996)
- University of Texas at Austin (June 1995)
- Oak Ridge National Laboratory (Jan. 1995)
- Texas A & M University (May 1994)
- Michigan State University — Pattern Recognition and Image Processing Laboratory (Nov. 1993)
- Michigan State University — Dept. of Computer Science (Nov. 1993)
- Carnegie Mellon University — Robotics Institute (Oct. 1993)
- Carnegie Mellon University — Vision and Autonomous Systems Center (Oct. 1993)
- Rensselaer Polytechnic Institute (March 1993)
- Illinois State University (March 1992)
- University of Chicago (Jan. 1992)
- University of Notre Dame (Jan. 1992)
- University of South Florida (April 1991)
- Illinois Institute of Technology (April 1991)

AWARDS AND HONORARIES

- Finalist (one of four), Best Interactive Paper Award, *Proc. IEEE-RAS Int'l. Conf. on Humanoid Robots*, 2015, L. Lanari, S. Hutchinson, "Planning Desired Center of Mass and Zero Moment Point Trajectories for Bipedal Locomotion."
- Recipient of the Academic Leaders Program's visiting professorship, Tecnológico de Monterrey, Campus of Guadalajara (2011)
- The Romulo Garza Award (third place in Science and Technology) from the Tec de Monterrey (2011), for the paper "Planning Exploration Strategies for Simultaneous Localization and Mapping," by B. Tovar, L. Munoz-Gomez, R. Murrieta-Cid, M. Alencastre-Miranda, R. Monroy, and S. Hutchinson, *Robotics and Autonomous Systems*, Elsevier, Vol. 54, No. 4, April 2006, pp. 314-331.
- Finalist (one of five), Best Student Paper Award (Stephen Kloder), *IEEE Int'l. Conf. on Robotics and Automation*, 2008, S. Kloder and S. Hutchinson, "Partial Barrier Coverage: Using Game Theory to Optimize Probability of Undetected Intrusion in Polygonal Environments."
- Finalist, (one of six) Best Student Paper Award (Sourabh Battacharya), *Robotics: Science and Systems IV*, 2008, S. Bhattacharya and S. Hutchinson, "Approximation Schemes for Two-Player Pursuit Evasion Games with Visibility Constraints."
- Best Paper Award, *Fourth Mexican Int'l Conf. on Artificial Intelligence*, R. Murrieta-Cid, A. Sarmiento, T. Muppirala, S. Hutchinson, R. Monroy, M. Alencastre-Miranda, L. Munoz-Gomez and R. Swain, "A Framework for Reactive Motion and Sensing Planning: A Critical Events-based Approach," in *Advances in Artificial Intelligence — MICAI*, A. Gelbukh, A. Albornoz, H. Terashima-Marn Eds., Springer-Verlag LCNS 3789, 2005, pp. 990-1000.
- José Negrete Best Paper Award, *IX Ibero-American Conference on Artificial Intelligence (IBERAMIA)*, A. Sarmiento, R. Murrieta-Cid and S. Hutchinson, "A Multi-robot Strategy for Rapidly Searching a Polygonal Environment," in *Advances in Artificial Intelligence – IBERAMIA*, C. Lemaître, C. A. Reyes, J. A. González Eds., Springer-Verlag, Heidelberg, LCNS 3315, 2004, pp. 484-493.
- Finalist (one of five) for the 1998 King-Sun Fu Memorial Best Transactions Paper Award, S. LaValle and S. Hutchinson, "Multiple-Robot Motion Planning Under Independent Objectives," *IEEE Trans. on Robotics and Automation*, Vol. 14, No. 6, Dec. 1998, pp. 912-925.
- Finalist (one of five) for the 1996 King-Sun Fu Memorial Best Transactions Paper Award, S. Hutchinson, G. Hager, and P. Corke, "A Tutorial on Visual Servo Control," *IEEE Trans. on Robotics and Automation*, Vol. 12, No. 5, Oct. 1996, pp. 651-670.
- Distinguished Student Paper Award (Steve LaValle), *Ninth Conference on Uncertainty in Artificial Intelligence*, 1993, S. LaValle and S. Hutchinson, "On Considering Uncertainty and Alternatives in Low-Level Vision."
- Fellow of the IEEE, 2007
- Arnold O. Beckman Research Award, 1994
- NSF Research Initiation Award, 1991
- Magoon Teaching Award, 1985
- Eta Kappa Nu

THESIS SUPERVISION

Ph.D. Thesis Supervision

- 1 Kevin Meier, *Visual-Inertial Curve SLAM*, Ph.D., Jan. 2018 (jointly supervised with Prof. Soon-Jo Chung).
- 2 Hyongju Park, *Fault-Tolerant Control Policies for Multi-robot Systems*, Ph.D., Jul. 2016
- 3 Junho Yang, *Vision-Based Estimation, Localization, and Mapping for Autonomous Vehicles*, Ph.D., Dec. 2015 (jointly supervised with Prof. Soon-Jo Chung).
- 4 Han Ul Yoon, *Assistive HRI Interface with Perceptual Feedback Control: An Approach to Customizing Assistance Based on User Dexterity*, Ph.D., Aug. 2014.
- 5 James Davidson, *Exploiting Insensitivity in Stochastic Systems to Learn Approximately Optimal Policies*, Ph.D., Aug. 2012.
- 6 Salvatore Candido, *Optimization of Stochastic, Partially Observed Systems using Switched Policies and a Sampling-based Approach*, Ph.D., Aug. 2011.
- 7 Sourabh Bhattacharya, *Pursuit-Evasion Games in Mobile Networks*, Ph.D., May. 2010.
- 8 Stephen Kloder, *Barrier Coverage: Deploying Robot Guards to Prevent Intrusion*, Ph.D., Dec. 2008.
- 9 Nicholas Gans, *Hybrid Switched System Visual Servo Control*, Ph.D., Dec. 2005.
- 10 Alejandro Sarmiento, *Generating Expected-Time Efficient Trajectories for Rapidly Finding an Object in Known Environments*, Ph.D., Dec. 2004.
- 11 Peter Leven, *A Framework for Real-Time Path Planning in Changing Environments*, Ph.D., May 2001.
- 12 Kevin Nickels, *Model Based Tracking of Articulated Objects*, Ph.D., Aug. 1998.
- 13 Rebecca Castano, *Yield Estimation for Multichip Module Ceramic Substrates*, Ph.D., Dec. 1997.
- 14 Herry Sutanto, *Robot Motion Planning with Visual Constraints*, Ph.D., May 1997 (jointly supervised with Dr. Rajeev Sharma).
- 15 Michael Barbehenn, *Toward Incremental Geometric Robot Motion Planning*, Ph.D., Dec. 1995.
- 16 Steven LaValle, *A Game-Theoretic Framework for Robot Motion Planning*, Ph.D., Aug. 1995.

M.S. Thesis Supervision

- 17 Martin Miller, *Hardware and Software Considerations for Monocular SLAM in a Riverine Environment*, M.S.E.C.E., Dec. 2017.
- 18 Yinai Fan, *Biped Walking Control Design Based on Zero Moment Point Dynamics*, M.S.M.S.E., May 2017.
- 19 Jifei Xu, *Biped Walking Trajectory Design and Stabilization*, M.S.E.C.E., May 2017.
- 20 Jon Hoff, *Optimizing the Structure and Movement of a Robotic Bat with Biological Kinematic Synergies*, M.S.M.S.E., May. 2017.
- 21 Mingyo Seo, *Application of a Model-Based Nonlinear Attitude Control for Quadrotor UAVs*, M.S.M.E., Aug. 2016.
- 22 Maria de Lourdes Labastida Valdes *Uso de la Medida de Perceptibilidad de Movimiento para Guiar Visualmente a un Vehculo Submarino*, M.S., Cinvestav, Saltillo, Mexico, (co-advisor) Dec., 2015.
- 23 Alexander von Alt, *From Interest Points to Map Transformation: A Discussion of RGB-D SLAM and Its Applications*, M.S.E.C.E., May 2013.
- 24 Dushyant Rao, *CurveSLAM: Utilizing Higher Level Structure in Stereo Vision-based Navigation*, M.S.A.E., Aug., 2012 (jointly supervised with Prof. Soon-Jo Chung).
- 25 Devin Bonnie, *Probabilistic Search: A bayesian Approach in a Continuous Workspace*, M.S.E.C.E., Dec. 2011.
- 26 Wenzhuo Ma, *Visual Servoing for Avoiding Environment Constraints*, M.S.E.C.E., May 2009.

- 27 Salvatore Candido, *Motion Planning for Bipedal Walking Robots*, M.S.E.E., May 2007.
- 28 James Davidson, *Hyperfiltering for Stochastic systems*, M.S.E.E., May 2007.
- 29 Sourabh Bhattacharya, *Optimal Paths for Landmark-Based Navigation by Nonholonomic Vehicles with Field-of-View Constraints*, M.S.E.E., May 2005.
- 30 Stephen Kloder, *Permutation-Invariant Multi-Robot Formations: A Complex Polynomial-Based Foundation*, M.S.C.S., Dec. 2004.
- 31 Bradley Chambers, *Point- and Window-Based Matching in Images Using Critical Point Filters*, M.S.E.E., May 2004.
- 32 Jerome Durand, *Real-Time Object Tracking Using Multiresolution Critical Points Filters*, M.S.E.E., Dec. 2002.
- 33 Nicholas Gans, *Performance Tests of Partitioned Approaches to Visual Servo Control*, M.S.E.E., May 2002.
- 34 Peter Kim, *Interactive Image Segmentation Using Level Set Methods in a Virtual Reality Environment*, M.S.C.S., Aug. 2000.
- 35 Youngmin Kim, *Projective Geometry and Visual Servoing*, M.S.E.E., Dec. 1997.
- 36 Eric Gree, *Using Corresponding Points for Object Modeling*, M.S.E.E., Dec. 1996.
- 37 Peter Leven, *A Multithreaded Implementation of a Robot Control C Library*, M.S.E.E., Dec. 1996.
- 38 Salvatore M. Mazzola, *Design and Control of an Underactuated Robot*, M.S.E.E., Dec. 1995.
- 39 Kevin Nickels, *Textured Image Segmentation Using Markov Random Fields: Returning Multiple Solutions*, M.S.E.E., Dec. 1995.
- 40 Ken Moroney, *Implementation and Analysis of Lowe's Model-Based Motion Tracking System*, M.S.E.E., May 1995.
- 41 Fredrick Geiger, *Hybrid Force/Vision Control of Robotic Manipulators*, M.S.E.E., December 1994.
- 42 Rebecca Castaño, *A Probabilistic Framework for Grouping Image Features*, M.S.E.E., August 1994.
- 43 James Reed, *Subpixel Parameter Estimation for Circular Shapes Using Image Sequences*, M.S.E.E., May 1994.
- 44 Michael Barbehenn, *Efficient Search and Hierarchical Motion Planning by Dynamically Maintaining Single-Source Shortest Paths Trees*, M.S.C.S., February, 1993.
- 45 Steven M. LaValle, *A Bayesian Framework for Considering Probability Distributions of Image Segments and Segmentations*, M.S.E.E., December, 1992.
- 46 Sandeep Pandya, *A Case-Based Approach to Robot Motion Planning*, M.S.C.S., August 1992.
- 47 Andrés Castaño, *Hybrid Vision/Position Servo Control of a Robotic Manipulator*, M.S.E.E., August, 1992.
- 48 Armando Fox, *Exploiting Visual Geometric Constraints in Robot Motion Planning with Uncertainty*, M.S.E.E., May 1992.
- 49 Robert Spence, *Avoiding Unexpected Moving Obstacles by Integrating Potential Field Planning and Real-Time Control*, M.S.E.E., May 1992.

External Examination Committees

- ◇ Caixia Cai, *Ph.D.*, Technical University of Munich (May, 2017)
- ◇ Liu Zhichao, *Ph.D.*, Nanyang Technological University (Dec., 2015)
- ◇ Riccardo Spica, *Ph.D.*, Université de Rennes, France (Dec., 2015)
- ◇ Olivier Roussel, *Ph.D.*, l'Université Paul Sabatier, Toulouse, France (Oct., 2015)
- ◇ Akbar Assa , *Ph.D.*, Ryerson University, Toronto, Canada October, 2014.
- ◇ Rob Reilink, *Ph.D.*, University of Twente, The Netherlands April, 2013.
- ◇ Alexandre Krupa, *Habilitation à diriger des recherches*, Université de Rennes, France (Nov., 2012)
- ◇ Azad Shademan, *Ph.D.*, University of Alberta, Edmonton, Alberta, Canada (Aug., 2012)
- ◇ Viviane Cadenat, *Habilitation à diriger des recherches*, l'Université Paul Sabatier, Toulouse, France (Dec., 2011)
- ◇ Felipe Augusto Weilemann Belo, *Ph.D.*, Università degli Studi di Pisa, July, 2011.
- ◇ Paolo Salaris, *Ph.D.*, Università degli Studi di Pisa, July, 2011.
- ◇ Michel Taix, *Habilitation à diriger des recherches*, l'Université Paul Sabatier, Toulouse, France (Feb., 2011)
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