

# **Dezhen Song, CV (宋德臻, 个人简历)**

## **RESEACH INTERESTS**

Networked Robotics, Robot Navigation, Computer Vision, Surveillance, Automation

## **EDUCATION**

- Aug. 2000 - Aug 2004, Ph.D., major in Robotics, Department of Industrial Engineering and Operations Research, University of California, Berkeley
- Aug. 1998 - Jul. 2000, Ph. D. student, Department of Industrial Engineering, Mississippi State University (Transferred)
- Sep. 1995 - Mar. 1998, M.S., major in Industrial Automation, in Department of Control Science and Engineering, Zhejiang University
- Sep. 1991 - Jul. 1995, B.S., major in Process Control, Department of Chemical Engineering, Zhejiang University

## **EMPLOYMENT**

- Aug. 2004 - present, *Assistant Professor*, Department of Computer Science, Texas A&M University
- May. 2001 - Aug. 2004, *Graduate Student Researcher*, Alpha Lab, Department of Industrial Engineering and Operations Research, University of California, Berkeley
- Sep. 2000 - Aug. 2001, *Programmer/Analyst/Graduate Student Instructor*, Department of Statistics, University of California, Berkeley
- Aug. 1998 - Jul. 2000, *Graduate Research Assistant*, Department of Industrial Engineering, Mississippi State University
- Jan. 1997 - Aug. 1998, *Chief Software Engineer/ Head of Research & Development Department/ CTO*, Nanwang, (Southern Video), China
- Sep. 1995 - Jan. 1998, *Graduate Research Assistant*, Institute of Industrial Process Control, Zhejiang University, China
- Sep. 1993 - Aug. 1995, *Undergraduate Research Assistant / Network Administrator*, Computer & Network Center, Department of Chemical Engineering, Zhejiang University, China

## **HONORS AND AWARDS**

- Award for Excellence in Physical Sciences & Mathematics, 2009, for contribution to Springer Handbook of Robotics, Association of American Publishers, Inc.
- Finalist, Best Paper Award, (with Dr. Wai Kin Victor Chan, Dr. Jingang Yi, Dr. Shengwei Ding), IEEE International Conference on Automation Science and Engineering (CASE), 2008
- Keynote Speaker, International Workshop on Distributed Sensing and Collective Intelligence in Biodiversity Monitoring, Amsterdam, The Netherlands, Dec. 3-5, 2008
- Finalist, NTF Award on Entertainment Robots and Systems (with K. Goldberg), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), San Diego, Oct. 2007  
(This new award is to review the papers in this category in the last 20 years since the beginning of the IROS conference and select the best paper from them.)
- TEES Select Young Faculty, 2007
- Faculty Early Career Development (CAREER) Award, National Science Foundation, 2007-2012.
- Semi-finalist (with blue team), DARPA Grand Challenge, Oct. 2005
- Kayamori Best Paper Award, (with Dr. Jingang Yi and Dr. Shengwei Ding), IEEE International Conference on Robotics and Automation, 2005
- Doctoral Symposium, ACM Multimedia 2003 (4 out of 20)

- Graduate School Scholarship, Zhejiang University in 1996
- Exemplary undergraduate student, Zhejiang University in 1995
- Exemplary undergraduate student, Zhejiang Province, P.R. China, 1995
- Guanghua Fellowship, Zhejiang University, 1994
- Excellent Student Scholarship, Zhejiang University: First Grade in 1994 (top 1%), Second Grade in 1993, 1992 (top 5%)
- Winner of National High School Olympic Physics Competition, Anhui Province, China, Grade 3, 1990
- Winner of National High School Olympic Chemistry Competition, Anhui Province, China, Grade 2, 1990
- Winner of Hefei High School Chemistry Contest, Anhui Province, P.R. China, Grade 1, 1989
- Winner of Hefei Middle School Chinese Writing Contest, Grade 1, Anhui, China, 1986

## RESEARCH GRANTS AND AWARDS

1. “*MRI: Acquisition of Mobile, Distributed Instrumentation for Response Research (RESPOND-R)*”, NSF MRI-0923203, \$1.4M (from NSF) + \$600k cost sharing, PI: Robin Murphy, Co-PIs: Aaron Ames, Radu Stoleru, Dezhen Song, and Ricardo Gutierrez-Osuna, Sep. 2009- Aug. 2012, (Pro-rated amount 20%)
2. “*Human-Robot Interaction to Monitor Climate Change Effects via Networked Robotic Observatories*”, Human-Robot Interaction: “Robots Among Us”, Microsoft External Research & Programs, \$70,000, PIs: Dezhen Song (Lead) and Ken Goldberg, April 2008-April 2009, (Pro-rated amount 50%)
3. “*Robotic BioTelemetry*”, NSF IIS-0643298, Faculty Early Career Development (CAREER), National Science Foundation, \$400,000, Jan. 2007- Jan. 2012, (Pro-rated amount 100%)
4. “*Collaborative Observatory for Natural Environment*”, National Science Foundation IIS-0534848/0535218, Dezhen Song (PI) and Ken Goldberg (Co-PI), \$440,000, July 2005 - July 2008, (Pro-rated amount 50%)
5. “*CAF: Perceptive Sensor Networks Laboratory*”, a CAF Proposal, PI: Andruid Kerne, Co-PIs: Ricardo Gutierrez-Osuna and Dezhen Song, Grant period: 2005, Amount: \$80,000. (Pro-rated amount 33%). [Internal Grant]



## PUBLICATIONS

### BOOK

- K1. Dezhen Song, *Sharing a Vision: Systems and Algorithms for Collaboratively-Teleoperated Robotic Cameras*, a Monograph in Springer Tracts on Advanced Robotics, Vol. 51, ISBN: 978-3-540-88064-6, 2009, Springer

### JOURNAL PAPERS

- J1. Dezhen Song, Chang Young Kim, and Jingang Yi, *Simultaneous Localization of Multiple Unknown CSMA-based Wireless Sensor Network Nodes Using a Mobile Robot with a Directional Antenna*, Journal of Intelligent Service Robots, vol. 2, No. 4, October, 2009, pp 219-233
- J2. Jingang Yi, Hongpeng Wang, Junjie Zhang, Dezhen Song, Suhada Jayasuriya, and Jingtian Liu, *Modeling and Analysis of Skid-Steered Mobile Robots with Applications to Low-Cost Inertial Measurement Unit-Based Motion Estimation*, IEEE Transactions on Robotics, Vol. 25, No. 5, October, 2009, pp. 1087-1097
- J3. Dezhen Song, Yiliang Xu, and Ni Qin, *Aligning Windows of Live Video from an Imprecise Pan-Tilt-Zoom Camera into a Remote Panoramic Display for Remote Nature Observation*, Journal of Real Time Image Processing (Accepted, in press)

- J4. Dezhen Song, Ni Qin, and Ken Goldberg, *Systems, Control Models, and Codec for Collaborative Observation of Remote Environments with an Autonomous Networked Robotic Camera*, *Autonomous Robots*, May 2008, Vol. 24, No. 4, pp. 435–449
- J5. Jingang Yi, Shengwei Ding, Dezhen Song, and Mike Tao Zhang, *Steady-State Throughput and Scheduling Analysis of Multi-Cluster Tools: A Decomposition Approach*, *IEEE Transactions on Automation Science and Engineering*, vol. 5, no. 2, pp 321-336, April 2008
- J6. Dezhen Song, Hyun Nam Lee, Jingang Yi, and Anthony Levandowski, *Vision-based Motion Planning for an Autonomous Motorcycle on Ill-Structured Roads*, *Autonomous Robots*, Vol. 23, No. 3, Oct. 2007, pp. 197-212
- J7. Dezhen Song and Ken Goldberg, *Approximate Algorithms for a Collaboratively Controlled Robotic Camera*, *IEEE Transactions on Robotics*, Vol. 23, No. 5, Oct. 2007, pp. 1061-1070
- J8. Dezhen Song, A Frank van der Stappen, and Ken Goldberg, *Exact Algorithms for Single Frame Selection on Multi-Axis Satellites*, *IEEE Transactions on Automation Science and Engineering*, Vol. 3, No. 1. January 2006, pp.16-28.
- J9. Goldberg K., Pashkevich A., Song D. *Geometrical calibration of robotic web-cameras*, *Transactions of Belarusian Engineering Academy*, vol. 1(15)/1, 2003, pp. 12-14.
- J10. Ken Goldberg, Dezhen Song, and Anthony Levandowski, *Collaborative Teleoperation with Using Networked Spatial Dynamic Voting*, *The Proceedings of THE IEEE*, Vol 91, Number 3, March 2003, pp 430-439.
- J11. D. Song and L. Dai (1996) *Online adaptive estimation and control of raw gas endpoint*. *Journal of Zhejiang University*. Special issue in process control., pp:404-407 (In Chinese)

#### JOURNAL PAPERS – UNDER REVIEW

- J12. Dezhen Song and Yiliang Yu, *A monocular vision-based low false negative filter for assisting the search for rare bird species using a probable observation data set-based EKF method*, *IEEE Transactions on Image Process*
- J13. Dezhen Song, Hyunma Lee, and Jingang Yi, *On the Analysis of the Depth Error on the Road Plane for Monocular Vision-Based Robot Navigation*, *Autonomous Robots*
- J14. Yiliang Xu and Dezhen Song, *Systems and Algorithms for Autonomous and Scalable Crowd Surveillance Using Robotic PTZ Cameras Assisted by a Wide-Angle Camera*, *Autonomous Robots*
- J15. Wai Kin Victor Chan, Shengwei Ding, Jingang Yi, and Dezhen Song, *Optimal Scheduling of Multi-Cluster Tools with Constant Robot Moving Times, Part II: Tree-Like Topology Configurations*, *IEEE Transactions on Automation Science and Engineering*
- J16. John H. Rappole, Selma Glasscock, Ken Goldberg, and Dezhen Song, *Range Change in Subtropical Birds in South Texas*, *The Auk: A Quarterly Journal of Ornithology*

#### BOOK CHAPTERS

- B1. Yiliang Xu and Dezhen Song, *Collaborative Crowd Surveillance Using Networked Robotics Cameras*, *Bentham E-books: Networking Humans, Robots, and Environments*, Editor: Nak-Young Chong
- B2. Dezhen Song, Hyunnam Lee, and Jingang Yi, *On the Analysis of the Depth Error on the Road Plane for Monocular Vision-Based Robot Navigation*, *Algorithmic Foundations for Robotics VIII*, Springer tracts on advanced robotics, Springer, 2008
- B3. Dezhen Song and Ken Goldberg, *Networked Robotic Cameras for Collaborative Observation of Natural Environments*, *Robotics Research, The 12th International Symposium*, Editors: Sebastian Thrun, Hugh Durrant-Whyte, and Rodney Brooks, Springer tracts on advanced robotics, Springer 2007, pages 510-519
- B4. D. Song, K. Goldberg, and N. Y. Chong, Chapter 32: *Networked Teleoperation*, *Springer Handbook on Robotics*, Editors: B. Sciliano and O. Khatib, 2008, pages 759-771. (**Award for Excellence in Physical Sciences & Mathematics, 2009, for Springer Handbook of Robotics, Association of American Publishers, Inc.**)

- B5. D. Song, A.F. van der Stappen, and K. Goldberg, *Exact and Distributed Algorithms for Collaborative Camera Control*, Editors: J.-D. Boissonnat, J. Burdick, K. Goldberg, and S. Hutchinson, *Algorithmic Foundations of Robotics V*, Springer tracts on advanced robotics, Springer, 2002, pages 167-184

## REFEREED CONFERENCE PAPERS

- C1. Jingang Yi, Yizhai Zhang, Dezhen Song, *Autonomous Motorcycles for Agile Maneuvers, Part I: Dynamic Modeling*, the 48th IEEE Conference on Decision and Control (CDC), Shanghai, Dec. 16-18, 2009.
- C2. Jingang Yi, Yizhai Zhang, Dezhen Song, *Autonomous Motorcycles for Agile Maneuvers, Part II: Control Systems Design*, the 48th IEEE Conference on Decision and Control (CDC), Shanghai, Dec. 16-18, 2009.
- C3. Siamak Faridani, Bryce Lee, Selma Glasscock, John Rappole, Dezhen Song, Ken Goldberg, *A Networked Telerobotic Observatory for Collaborative Remote Observation of Avian Activity and Range Change*, the IFAC workshop on networked robots, Oct. 6-8, 2009, Golden, Colorado [Acceptance rate N/A]
- C4. Yiliang Xu and Dezhen Song, *Systems and Algorithms for Autonomously Simultaneous Observation of Multiple Objects Using Robotic PTZ Cameras Assisted by a Wide-Angle Camera*, The 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), St. Louis, USA, Oct. 11-15, 2009 [Acceptance rate 54.5%]
- C5. Ji Zhang and Dezhen Song, *On the Error Analysis of Vertical Line Pair-based Monocular Visual Odometry in Urban Area*, The 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), St. Louis, USA, Oct. 11-15, 2009 [Acceptance rate 54.5%]
- C6. Dezhen Song, Chang Young Kim, Jingang Yi, *Monte Carlo Simultaneous Localization of Multiple Unknown Transient Radio Sources Using a Mobile Robot with a Directional Antenna*, IEEE International Conference on Robotics and Automation (ICRA), Kobe, Japan, May 12-17, 2009. [Acceptance rate 43%]
- C7. Hongpeng Wang, Junjie Zhang, Jingang Yi, Dezhen Song, Suhada Jayasuriya, Jingtai Liu, *Modeling and Analysis of Skid-Steered Mobile Robots*, IEEE International Conference on Robotics and Automation (ICRA), Kobe, Japan, May 12-17, 2009. [Acceptance rate 43%]
- C8. Dezhen Song, Hyunnam Lee, and Jingang Yi, *On the Analysis of the Depth Error on the Road Plane for Monocular Vision-Based Robot Navigation*, The Eighth International Workshop on the Algorithmic Foundations of Robotics (WAFR), Dec. 7-9, 2008, Guanajuato, México
- C9. Jingang Yi, Hongpeng Wang, Jingtai Liu, Dezhen Song, *LMST-Based Safety-Preserved Consensus Control of Multi-Robot Systems with Kinodynamic Constraints*, Dynamic Systems and Control Conference (DSCC), Ann Arbor, Michigan, October 20-22, 2008 [Acceptance rate N/A]
- C10. Wai Kin Victor Chan, Jingang Yi, Shengwei Ding, and Dezhen Song, *Optimal Scheduling of K-Unit Production of Multi-Cluster Tools with Single-Blade Robots*, IEEE International Conference on Automation Science and Engineering (CASE), Washington DC, August, 2008 [Acceptance rate 57%] (**Finalist, Best Conference Paper Award**)
- C11. Dezhen Song, Ni Qin, Yiliang Xu, Chang Young Kim, David Luneau, and Ken Goldberg, *System and Algorithms for an Autonomous Observatory Assisting the Search for the Ivory-Billed Woodpecker*, IEEE International Conference on Automation Science and Engineering (CASE), Washington DC, August, 2008 [Acceptance rate 57%]
- C12. Jeremy Schiff, Anand Kulkarni, Danny Bazo, Vincent Duindam, Ron Alterovitz, Dezhen Song, Ken Goldberg, *Actuator networks for navigating an unmonitored mobile robot*, IEEE International Conference on Automation Science and Engineering (CASE), Washington DC, August, 2008 [Acceptance rate 57%]
- C13. Yiliang Xu, Dezhen Song, Jingang Yi, and A. Frank van der Stappen, *An Approximation Algorithm for the Least Overlapping p-Frame Problem with Non-Partial Coverage for Networked Robotic Cameras*, IEEE International Conference on Robotics and Automation (ICRA), Pasadena, CA, May 2008. [Acceptance rate 43.4%]

- C14. Ni Qin and Dezhen Song, *On-Demand Sharing of a High-Resolution Panorama Video from Networked Robotic Cameras*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Oct, 2007, San Diego, CA [Acceptance rate 52.4%]
- C15. Jingang Yi, Junjie Zhang, Dezhen Song, and Suhada Jayasuriya, *IMU-based Localization and Slip Estimation for Skid-Steered Mobile Robots*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Oct, 2007, San Diego, CA [Acceptance rate 52.4%]
- C16. Jingang Yi, Dezhen Song, Junjie Zhang, and Zane Goodwin, *Adaptive Trajectory Tracking Control of Skid-Steered Mobile Robots*, IEEE International Conference on Robotics and Automation (ICRA), April, 2007, Roma, Italy [Acceptance rate 43.7%]
- C17. Jingang Yi, Shengwei Ding, Dezhen Song, and Mike Tao Zhang, *Multi-Robot Scheduling in Cluster Tools with Buffer/Process Modules*, IEEE International Conference on Robotics and Automation (ICRA), April, 2007, Roma, Italy [Acceptance rate 43.7%]
- C18. Dezhen Song, Jingang Yi, and Zane Goodwin, *Localization of Unknown Networked Radio Sources Using a Mobile Robot with a Directional Antenna*, American Control Conference (ACC), July 2007, New York, NY [Acceptance rate 60%]
- C19. Dezhen Song, Hyun Nam Lee, Jingang Yi, and Anthony Levandowski, *Vision-based Motion Planning for an Autonomous Motorcycle on Ill-Structured Road*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Oct. 2006, Beijing, China, pp. 3279-3286 [Acceptance rate 46%]
- C20. Dezhen Song, Ni Qin, and Ken Goldberg, *A Minimum Variance Calibration Algorithm for Pan-Tilt Robotic Cameras in Natural Environments*, IEEE International Conference on Robotics and Automation (ICRA), May. 2006, Orlando, Florida, pp. 3449 - 3456 [Acceptance rate 38.7%]
- C21. Ni Qin, Dezhen Song, and Ken Goldberg, *Aligning Windows of Live Video from an Imprecise Pan-Tilt-Zoom Robotic Camera into a Remote Panoramic Display*, IEEE International Conference on Robotics and Automation (ICRA), May. 2006, Orlando, Florida, pp. 3429 - 3436 [Acceptance rate 38.7%]
- C22. Jingang Yi, Dezhen Song, Anthony Levandowski, and Suhada Jayasuriya, *Trajectory Tracking and Balance Stabilization Control of Autonomous Motorcycles*, IEEE International Conference on Robotics and Automation (ICRA), May. 2006, Orlando, Florida, pp. 2583 - 2589 [Acceptance rate 38.7%]
- C23. Dezhen Song and Ken Goldberg, *Networked Robotic Cameras for Collaborative Observation of Natural Environments*, The 12th International Symposium of Robotics Research (ISRR 2005), October 12th-15th, 2005, San Francisco, CA, pp. xxx-xxx, [Acceptance rate N/A]
- C24. Dezhen Song, Qiang Hu, Ni Qin, and Ken Goldberg, *Automating Inspection and Documentation of Remote Building Construction using a Robotic Camera*, IEEE International Conference on Automation Science and Engineering (CASE) 2005, August 1 & 2, 2005, Edmonton, Canada, Page(s):172 - 177 [Acceptance rate around 50%]
- C25. Jingang Yi, Shengwei Ding, and Dezhen Song, *Steady-State Throughput and Scheduling Analysis of Multi-Cluster Tools for Semiconductor Manufacturing Using a Decomposition Method*, (**Kayamori Best Paper Award**) IEEE International Conference on Robotics and Automation (ICRA), Barcelona, Spain, Apr. 2005, pp. 292 - 298 [Acceptance rate 45%]
- C26. Dezhen Song, A. Frank van der Stappen, and Ken Goldberg, *An Exact Algorithm Optimizing Coverage-Resolution for Automated Satellite Frame Selection*, IEEE International Conference on Robotics and Automation (ICRA), New Orleans, LA, Apr. 2004, vol. 1, Page(s):63 - 70 [Acceptance rate 58%]
- C27. Ken Goldberg, Dezhen Song, In Yong Song, Jane McGonigal, Wei Zheng, and Dana Plautz, *Unsupervised Scoring for Scalable Internet-Based Collaborative Teleoperation*, IEEE International Conference on Robotics and Automation (ICRA), New Orleans, LA, Apr. 2004 Vol.5, Page(s):4551 - 4556 [Acceptance rate 58%]
- C28. Dezhen Song, *Algorithms and Systems for Shared Access to a Robotic Streaming Video Camera*, Doctoral Symposium, ACM Multimedia 2003 (MM2003), Berkeley, California, Nov., 2003 [Acceptance rate 20%]
- C29. D. Song and K. Goldberg, *ShareCam Part I: Interface, System Architecture, and Implementation of a Collaboratively Controlled Robotic Webcam*, IEEE/RSJ International Conference on Intelligent Robots and Systems, Las Vegas, Nevada, Oct. 2003. [Acceptance rate round 50%] (**Finalist, NTF Award on Entertainment Robots and Systems, IROS 2007**)

- C30. D. Song, K. Goldberg, and A. Pashkevich, *ShareCam Part II: Approximate and Distributed Algorithms for a Collaboratively Controlled Robotic Webcam*, IEEE/RSJ International Conference on Intelligent Robots and Systems, Las Vegas, Nevada, Oct.2003. [Acceptance rate round 50%]
- C31. S. Har-Peled, V. Koltun, D. Song, and K. Goldberg, *Efficient Algorithms for Shared Camera Control*, In Proceedings of the 19th ACM Symposium on Computational Geometry, 2003. [Acceptance rate 36%]
- C32. D. Song, A.F. van der Stappen, and K. Goldberg, *Exact and Distributed Algorithms for Collaborative Camera Control*, the Fifth International Workshop on Algorithmic Foundations of Robotics. Nice, France, Dec 15~17, 2002. [Acceptance rate around 40%]
- C33. K. Goldberg, D. Song, Y. Khor, D. Pescovitz, A. Levandowski, J. Himmelstein, J. Shih, A. Ho, E. Paulos, J. Donath, *Collaborative Online Teleoperation with Spatial Dynamic Voting and a Human "Tele-Actor"*, the IEEE International Conference on Robotics and Automation, Washington D.C. May 11~15, 2002. [Acceptance rate 58%]
- C34. D. Song and D.B. Kaber (2000). *Web-based interface design for teleoperation*. In the Proceedings of the XIVth Triennial Congress of the International Ergonomics Association and 44th Annual Meeting of the Human Factors and Ergonomics Society (pp. 449-452). Human Factors and Ergonomics Society: Santa Monica, CA. [Acceptance rate N/A]
- C35. D. Song and D. B. Kaber, (1999) *Teleoperation test-bed development for human factors research*. The 2nd Annual Student's Symposium on Human Factors & Ergonomics of Complex Systems. Greensboro, NC, April [Acceptance rate N/A]
- C36. D. B. Kaber, R. Zhou, and D. Song. (1999). *Design and prototyping of an economical teleoperations test-bed for human factors research: Cost, resource requirements and capability assessment*. The 25th International Conference on Computers & Industrial Engineering. New Orleans, LA, Mar. 27-29 [Acceptance rate N/A]
- C37. D. Song and L. Dai (1997) *A hybrid model based soft-sensor and application*. Proceedings of the 4th International Conference on Measurement and Control of Granular Materials, MCGM97, Shenyang, P R China, 17-19 September 1997, pp:171-177 [Acceptance rate N/A]

## REFEREED VIDEO

- V1. A. Levandowski, A. Schultz, C. Smart, A. Krasnov, H. Chau, B. Majusiak, F. Wang, D. Song, J.Yi., H. Lee, and A. Parish, *Autonomous Motorcycles*, IEEE International Conference on Robotics and Automation (ICRA), May. 2006, Orlando, Florida,

## TECHNICAL REPORTS

1. Dezhen Song, Ni Qin, and Ken Goldberg, *Algorithms for Maintaining a High-Resolution Panoramic Display with a Tele-Operated Robotic Camera*, TR 2005-5-1, Department of Computer Science, Texas A&M University, 2005
2. Dezhen Song, *Probabilistic Modeling of Leach Protocol and Computing Sensor Energy Consumption Rate in Sensor Networks*. Technical report, TR 2005-2-2, Department of Computer Science, Texas A&M University, 2005.
3. Dezhen Song, Chang Young Kim, and Jingang Yi, *Monte Carlo Simultaneous Localization of Multiple Unknown Transient Radio Sources Using a Mobile Robot with a Directional Antenna*, TR 2008-11-1, Department of Computer Science and Engineering, Texas A&M University, 2008.
4. Dezhen Song and Yiliang Xu, *Monocular Vision-based Detection of a Flying Bird*, TR 2008-11-3, Department of Computer Science and Engineering, Texas A&M University, 2008.

## TECHNICAL DEMONSTRATIONS AND EXHIBITIONS

1. Bryce Lee, Anand Kulkarni, Ken Goldberg, Dezhen Song, Deanna Wilkes-Gibbs, *Science and Social TV: Collaborative Observatories for Field Biology*, First International Conference on Designing Interactive User Experiences for TV and Video (uxTV), October 22 - 24, 2008, Silicon Valley (San Francisco Bay Area), California, USA

2. Dezhen Song and Ken Goldberg, *ShareCam: Shared Access to a Robotic Streaming Video Camera*, Technical Demos, ACM Multimedia 2003 (MM2003) Nov, 2003.
3. Ken Goldberg, Dezhen Song, In Yong Song, Jane McGonigal, Wei Zheng, *Collaborative Tele-Experiences: Tele-Actor, Co-Opticon and Tele-Twister*, dorkbot-sf, rxGallery, Oct, 2003
4. Ken Goldberg, Dezhen Song et al., *The Tele-Actor Project*, Teleopolis, 2nd Wednesdays Art Series at the Exploratorium, San Francisco, February 13, 2002

## THESIS

1. Dezhen Song. PhD thesis: *Systems and Algorithms for Collaborative Tele-Operation*. Department of Industrial Engineering and Operations Research, University of California, Berkeley, Aug 2004.
2. Dezhen Song, Master thesis: *Soft sensor and its applications*, Department of Control Science and Engineering, Zhejiang University, Mar. 1998

## TEACHING AND ADVISING

### COURSES

- Fall 2009: CPSC 483 Computer System Design
- Spring 2009: CPSC 452 Introduction to Robotics & CPSC 643 Advanced Robotics
- Fall 2008: CPSC 689-602: Computer Vision
- Spring 2008: CPSC 452 Introduction to Robotics & CPSC 643 Advanced Robotics
- Fall 2007: CPSC 689-601: Computer Vision: Multi-view Geometry
- Spring 2007: CPSC 452 Introduction to Robotics & CPSC 643 Advanced Robotics
- Spring 2006: CPSC 452 Introduction to Robotics
- Fall 2005: CPSC 689-601 Networked Robots
- Spring 2005: CPSC 452 Introduction to Robotics
- Fall 2004: CPSC 689-609 Networked Robots

### CURRENT GRADUATE STUDENTS

- Ph.D.:
  - Yiliang Xu
  - Chang Young Kim
  - AliAkbar Aghamohammadi
  - Bin Qian
  - Shiyu Hu
  - Wen Li
- Master: Ji Zhang

### GRADUATED STUDENTS

- Ph.D.:
  - Dr. Hyun Nam Lee (Samsung, Aug. 2008)
  - Dr. Ni Qin (May 2008)
- Master:
  - Qiang Hu (Microsoft, Spring 2006)

### POSTDOC

- Zhigang Bing (Oct. 2008- Apr. 2009)

## **OTHER SUPERVISED STUDENTS**

- John Glassmyer (CPSC 491, Fall 2008)
- Pedro Davalos (CPSC 685, Summer 2008)
- Tyler Southard (REU, Summer 2008)
- Benjamin Fine (REU, Summer 2008)
- Hongpeng Wang (visiting Ph.D. student from Nankai University, Sep. 2007-Aug. 2008)
- Philip Ritchey (CPSC 485, Spring 2008)
- Jonathan Kelm (CPSC 485, Spring 2008)
- Brandon A. Green (CPSC 691, Fall 2007-Spring 2008)
- Zane Goodwin (CPSC 691, Fall 2005-Spring 2007)
- Terry Peng (CPSC 691, Spring 2007)
- Justin Yang (CPSC 691, Spring 2007)
- Joe Hasty (CPSC 485, Summer 2006)
- Craig M. Eidson (CPSC 485, Summer 2006)
- Nathan Williams (REU, Summer 2006)
- Michael Pellon (REU, Summer 2006)
- Luis Castillo (CPSC 485, Spring 2006)
- Yong Kyung Choi (CPSC 485, Spring 2006)
- Mathew E. Riley (CPSC 685, Spring 2006)
- Tan Van Lao (CPSC 485, Fall 2005)
- Amanda Coots (CPSC 485, Summer, Fall 2005)
- Mike Pantaleano (REU&USRG, Summer 2005)
- Elizabeth A Grant (CPSC 485, Spring 2005)

## **PROFESSIONAL ACTIVITIES AND SERVICE**

### **AFFILIATED SOCIETY MEMBERSHIP**

- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, IEEE Robotics and Automation Society (IEEE RAS)
- Founding Member, IEEE RAS Technical Committee on: Networked Robots

### **EDITORIAL**

- Associate Editor (AE), IEEE Transactions on Automation Science and Engineering, Starting Jan. 2010
- Associate Editor (AE), IEEE Transactions on Robotics, July 2008-present
- Guest Editor, Special issue on networked robots, Journal of Intelligence Service Robot (JISR), 2009
- Associate Editor (AE), IEEE Robotics and Automation Society, Conference Editorial Board, 2007-2009

### **PANELISTS**

- Cyber Physical System, National Science Foundation, April 2009
- Robust Intelligence, National Science Foundation, April 2008
- Human-Robot Interaction, National Science Foundation, March 2007
- IIS-GENI Workshop, National Science Foundation, November 2006

### **EXTERNAL WORKSHOP AND COMMITTEE**

- Co-Chair, Technical Committee on Networked Robots, IEEE Robotics and Automation Society, 2007- 2009
- Co-Chair, the Workshop on Network Robot Systems: Ubiquitous, Cooperative, Interactive Robots for Human Robot Symbiosis, San Diego, California, U.S.A. October 29 (full day), IROS 2007.
- Graduate Student Representative: Academic Senate: Computing & Communications Committee (COMP), University of California, Berkeley (2002-2003)

#### **INTERNAL COMMITTEE**

- Advisory Committee (AdCom), Computer Science and Engineering Department, 2008-2009, 2009-2010
- Undergraduate Curriculum Committee (UGCC), Computer Science and Engineering Department, 2008-2009, 2009-2010
- Web Committee, Computer Science Department, 2007-2008
- Communication Committee, Computer Science Department, 2006-2007
- Space Committee, Computer Science Department, 2005-2006
- Library Committee, Computer Science Department, 2004-2005

#### **CONFERENCE PROGRAM COMMITTEE MEMBER**

- IFAC Workshop on Networked Robotics October 6-8, 2009, Golden, Colorado, USA
- International Workshop on Robotic Wireless Sensor Networks (RWSN 2009), Held in conjunction with the International Conference on Distributed Computing in Sensor Systems (DCOSS)
- Special track on Physically Grounded Artificial Intelligence (PGAI), AAAI 2008
- IEEE International Conference on Robotics and Automation (ICRA), 2006
- International Workshop on Algorithmic Foundations of Robotics (WAFR), 2006
- International Conference on Robotics Science and Systems (RSS), 2006-2009
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2006, 2005
- The First Workshop on Wireless Multihop Communications in Networked Robotics, April 4th, 2008, Berlin, Germany, <http://www.wmcnr.org>
- International Conference on Advanced Robotics (ICAR), 2007, 2005
- IEEE International Conference on Mechatronics and Automation (ICMA), 2005

#### **CONFERENCE SESSION CHAIR OR CO-CHAIR**

- Session chair, Session TuDT9: Surveillance with Vision, IEEE/ RSJ International Conference on Intelligent Robots and Systems (IROS), Oct. 13, 2009
- Session co-chair, IEEE International Conference on Automation Science and Engineering (CASE), August, 2008
- Session co-chair, IEEE International Conference on Robotics and Automation (ICRA), May 2008
- Session chair, networked teleoperation, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Oct. 31, 2007

#### **INVITED TALKS – EXTERNAL**

- TE1. *Collaborative Observatories for Natural Environments*, Workshop on Human-Environment Mobile-Based Interactions, MIT Media Lab, Sep. 15, 2009
- TE2. *Collaborative Observatories for Natural Environments*, Rio Brazos Audubon, July 8, 2009

- TE3. *Collaborative Observatories for Natural Environments*, Kavraki Lab, Department of Computer Science, Rice University, April 7, 2009
- TE4. **Keynote Speaker:** *Collaborative Observatories for Natural Environments*, International Workshop on Distributed Sensing and Collective Intelligence in Biodiversity Monitoring, Amsterdam, The Netherlands, Dec. 3-5, 2008
- TE5. *Collaborative Observatories for Natural Environments*, Center for Perceptual Robotics, Intelligent Sensors and Machines, The City University of New York, Nov. 17, 2008
- TE6. *Collaborative Observatories for Natural Environments*, the Workshop on Network Robot Systems: Ubiquitous, Cooperative, Interactive Robots for Human Robot Symbiosis, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), San Diego, California, U.S.A. October 29, 2007
- TE7. *Collaborative Observatories for Natural Environments*, the Workshop on Robotic Sensor Networks, Robotic Science and Systems Conference, Atlanta, GA, Jun. 30, 2007
- TE8. *Collaborative Observatories for Natural Environments*, Institute of Automation, China Academe of Science, Beijing, China, Oct. 13, 2006
- TE9. *Networked Robotic Cameras for Collaborative Observation of Natural Environments*, Institute of Robotics and Automatic Information System, Nakai University, Tianjing, China, Jul 25, 2006
- TE10. *Networked Robotic Cameras for Collaborative Observation of Natural Environments*, Workshop on Network Robot Systems: Toward Intelligent Robotic Systems Integrated with Environments, IEEE International Conference on Robotics and Automation (ICRA), Orlando, Florida, May 19, 2006
- TE11. *Collaborative Observatory for Natural Environments*, the 12<sup>th</sup> International Symposium of Robotics Research, Oct 12<sup>th</sup>-15<sup>th</sup>, 2005, San Francisco, CA, USA
- TE12. *Networked Robotic Cameras (NRC): Algorithms and Systems*, Center for Intelligent System Seminar, University of California, Berkeley (Mar. 17, 2005)
- TE13. *Wireless Network Architectures for Collaborative Tele-operation*, Workshop on Wireless and Networked Robot, IEEE International Conference on Robotics and Automation (ICRA 2004), New Orleans, April, 2004
- TE14. *Systems and Algorithms for Collaborative Teleoperation*, Department of Computer Science, Texas A&M University, April 20, 2004
- TE15. *Algorithms and Systems for Shared Access to a Robotic Streaming Video Camera*, ACM Multimedia 2003, Doctoral Symposium, November 2-8, Berkeley, CA, USA

#### INVITED TALKS – INTERNAL

- TI1. *Collaborative Observation of Natural Environments*, Industry Affiliates Program, Department of Computer Science, Texas A&M University, Mar. 2008
- TI2. *ICRA 2006 Preview: A Minimum Variance Calibration Algorithm for Pan-Tilt Robotic Cameras in Natural Environments*, Parasol Seminar, Department of Computer Science, Texas A&M University, Apr. 28, 2006
- TI3. *Robot Cameras for Rediscovery of Ivory Billed Woodpecker*, CPSC 681 Seminar, Department of Computer Science, Texas A&M University, Mar. 20, 2006 *Internet-Based Collaborative Teleoperation*, Industrial Affiliates Program (IAP) Event, Department of Computer Science, Texas A&M University, Sep. 14~15, 2004
- TI4. *Network Human with Robot: Scalable Algorithms and Systems for Collaborative Teleoperation*, CPSC 681 Seminar, Department of Computer Science, Texas A&M University, Sep. 6, 2004
- TI5. *Network Human with Robot: Scalable Algorithms and Systems for Collaborative Teleoperation*, Parasol Seminar, Department of Computer Science, Texas A&M University, Sep. 3, 2004
- TI6. *Systems and Algorithms for Collaborative Teleoperation*, Department of Industrial Engineering and Operations Research, University of California, Berkeley, August 30, 2002, Berkeley, CA, USA

#### TECHNICAL REVIEWS

- R1. IEEE Transactions on Systems, Man, and Cybernetics – Part B (T-SMC-B), Nov. 2009

- R2. ASME Journal of Dynamic Systems, Measurement and Control, Oct. 2009
- R3. IEEE International Conference on Robotics and Automation (ICRA 2010), Oct. 2009
- R4. Mathematical Problems in Engineering (MPE), Sep. 2009
- R5. IEEE Transactions on Automation Science and Engineering (T-ASE), Sep. 2009
- R6. Sensors, August, 2008
- R7. The 2009 IFAC Workshop on Networked Robotics, Oct. 6-8, 2009, Golden, Colorado, USA
- R8. Proposal reviewer, Texas A&M-CONACYT Collaborative Research Grant Program, May 2009
- R9. Journal of Zhejiang University- Science A, May 2009
- R10. Journal of Real Time Image Processing, Apr. 2009
- R11. Bentham Science Publishers e-book proposal, Mar. 2009
- R12. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2009, St. Louis
- R13. IEEE Transactions on Systems, Man, and Cybernetics – Part B (T-SMC-B), Feb. 2009
- R14. The 2009 American Control Conference (ACC), St. Louis, Missouri, USA June 10 - 12, 2009
- R15. IEEE Transactions on Systems, Man, and Cybernetics – Part B (T-SMC-B), Nov. 2008
- R16. EURASIP Journal on Advances in Signal Processing, Oct. 2008
- R17. IEEE Wireless Communications Magazine, Sep. 2008
- R18. IEEE Transactions on Semiconductor Manufacturing (T-SM), August, 2008
- R19. IEEE Transactions on Automation Science and Engineering (T-ASE), May 2008
- R20. IEEE International Conference on Automation Science and Engineering (CASE) Washington, D.C., USA, August 23-26, 2008,
- R21. The 1st ASME Annual Dynamic Systems and Control Conference, DSC 2008, October 20-22, 2008 in Ann Arbor, Michigan, USA
- R22. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2008
- R23. IEEE Transactions on Robotics, Jan. 2008
- R24. Proposal Reviewer, Qatar National Research Fund (QNRF), managed by the U.S. Civilian Research & Development Foundation (CRDF), Sep. 2007
- R25. IEEE International Conference on Automation Science and Engineering (CASE), Scottsdale, Arizona, 2007
- R26. The 13th International Conference on Advanced Robotics (ICAR), Jeju Island, Korea, 2007
- R27. Robotics Science and Systems Conference (RSS), Feb, 2007
- R28. IEEE Transactions on Systems, Man, and Cybernetics – Part B, Jan. 2007
- R29. IEEE International Conference on Robotics and Automation (ICRA), 2007, Rome, Italy
- R30. Computer/Human Interaction Conference, CHI 2007, Oct. 2006
- R31. Journal of Microprocessors and Microsystems, Elsevier, Jul. 2006
- R32. The 9<sup>th</sup> International Conference on Control, Automation, Robotics and Vision, (ICARCV), Singapore, Dec, 2006
- R33. The Seventh International Workshop on Algorithmic Foundations of Robotics (WAFR), 2006
- R34. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2006, Beijing, China
- R35. IEEE International Conference on Mechatronics and Automation (ICMA), 2006
- R36. Robotics Science and Systems Conference (RSS), March, 2006
- R37. International Journal of Computer Vision (IJCV), Feb., 2006
- R38. IEEE International Conference on Robots and Automation (ICRA), 2006
- R39. IEEE Transactions on Automation Science and Engineering (T-ASE), Sep. 2005
- R40. IEEE Transactions on Multimedia, Sept. 2005
- R41. Journal of Intelligent Manufacturing, May, 2005
- R42. IEEE International Conference on Mechatronics and Automation (ICMA), 2005
- R43. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2005, Edmonton, Alberta, CA
- R44. IEEE Transactions on Multimedia, March 2005
- R45. International Journal of Robotics Research, Feb. 2005
- R46. The 12th International Conference on Advanced Robotics (ICAR), Seattle, WA, 2005
- R47. IEEE International Conference on Robotics and Automation (ICRA), 2005, Barcelona, Spain
- R48. IEEE Transactions on Mechatronics, January 2004,
- R49. IEEE International Conference on Robotics and Automation (ICRA), 2004, New Orleans, USA

- R50. Control Engineering Practice, A Journal of IFAC, the International Federation of Automatic Control, Nov., 2003
- R51. International Workshop on Multimedia Technologies in E-Learning and Collaboration, 2003, Nice, France
- R52. IEEE/RSJ International Conference on Intelligent Robots and Systems, 2003, Las Vegas, USA
- R53. Journal of Autonomous Robots, Special Issue on "Internet and Online Robots" Jan. 2003
- R54. Control Engineering Practice, A Journal of IFAC, the International Federation of Automatic Control, Dec., 2002
- R55. IEEE International Conference on Robotics and Automation (ICRA), 2003, Taiwan
- R56. The Fifth International Workshop on Algorithmic Foundations of Robotics (WAFR), Nice, France, 2002
- R57. IEEE International Conference on Robotics and Automation (ICRA), 2002, Washington DC, USA

## SELECTED MEDIA COVERAGE

1. *Big Brother at the Bird Feeder* – by Anne Pinckard Berkeley Alumni Magazine, September/October, 2008
2. *Ideal remote camera for locating Ivory-bills is just an idea*, by Matt Mendenhall, Associate Editor, December 2007, Birder's world
3. *4 Robots That Are Saving the World: Smart machines help fix humanity's ecological screwups*, by Brittany Grayson, 09.07.2007, DISCOVER Magazine
4. *Seeking Ivory-Billed Woodpecker*, Multimedia Gallery, National Science Foundation, August, 2007.
5. *SF Bird-Watching Game Debuts From Craig's Backyard*, (CBS 5 / BCN) SAN FRANCISCO.\
6. *Remote Biology*, by Chad Vander Veen, Jul 5, 2007, www.govtech.com
7. *Birdwatching goes hi-tech with online video camera game*, By Sarah Yang, Media Relations, 19 April 2007, UC Berkeley News, ACM TechNews, Issue: Apr. 20, 2007
8. *Robot Enlisted to Spot Rare Woodpecker*, Irene Klotz, Mar 5, 2007, Discovery News.
9. *Automating The Search For the Ivory-Billed Woodpecker*, February 23, 2007: Podcast: 60-Second Science, ScientificAmerican.com.
10. *Robot Bird-Watcher An intelligent video system in an Arkansas bayou searches for an elusive bird*, By Rachel Ross, Tuesday, February 20, 2007, MIT Technology Review
11. *We're going the way of the robot*, BY BRYN NELSON, February 20, 2007, newstoday.com
12. *Robotic Cameras Join Search For 'Holy Grail Of Bird-watching'*, by Sarah Yang, 20-Feb-2007, ScienceDaily.com
13. *AAAS: Big Brother for Birds*, Monday, 19 February 2007, Wired News
14. *Robot hunts 'the Elvis of extinct birds'*, by Mark Henderson, Science Editor, February 19, 2007, TimesOnline
15. *Robotic Eye on Celebrated Bird*, Monday, by Marc Kaufman, February 19, 2007; Page A07, Washingtonpost
16. *Robot birdwatcher joins hunt for elusive woodpecker*, 12:39 19 February 2007, NewScientist.com news service Gaia Vince, San Francisco.
17. *Robotic Cameras help Naturalists Locate Ivory-Billed Woodpecker*, by Shubha Krishnappa - February 19, 2007, www.themoneytimes.com
18. *Robotic cameras to locate ivory-billed woodpecker*, Author : Mike Burns, Feb. 19, 2007, earthtimes.org
19. *Robots join search for ivory-billed woodpecker*, Feb. 19, 2007, CNN news
20. *Robotic Cameras Join Search for Elusive Woodpecker*, By REUTERS Published: February 18, 2007, New York Times
21. *ACONE versus Woody*, Feb 17, 2007, p2pnet.net
22. *Computer scientists join in search for ivory-billed woodpecker*, by Susan E. Cotton, Feb. 17, 2007, Eurekalert.org
23. *Robotic cameras join search for 'Holy Grail of bird-watching'*, by Sarah Yang, 17-Feb-2007, Eurekalert.org

24. *Computer scientists join in search for ivory-billed woodpecker*, by Susan E. Cotton, Feb. 17, 2007, [www.biologynews.net](http://www.biologynews.net)
25. *Hunt for Woodpecker Goes High-Tech*, Mike Lafferty, THE COLUMBUS DISPATCH, February 20th, 2007, [AdvancedImagingPro.com](http://AdvancedImagingPro.com)
26. *Song wins NSF CAREER award for teleoperated robotics research*, News Story 1398, November 16, 2006, by Susan E. Cotton, Texas A&M Engineering News, <http://engineeringnews.tamu.edu/news/1398>
27. *The Ghost Bird and the Robot*, by David Pescovitz, Forefront Magazine (UC Berkeley Alumni Magazine), fall 2006
28. *Robot Cameras in the Wild*, by David Pescovitz, Lab Notes, College of Engineering, Berkeley, mentioned by ACM Tech news, Volume 8, Issue 885: Wednesday, January 4, 2006
29. *Computer scientist's robotic research to rival Animal Planet*, by Susan E. Cotton, Texas A&M Engineering News, August 19, 2005
30. *Students design driverless motorcycle for competition*, By: Steven Romo, May 3, 2005, The Battalion Online.
31. *Texas A&M-Berkeley team to compete in 2005 DARPA Grand Challenge*, by Bonnie L. Shortner, College of Engineering, Texas A&M University, April 20, 2005
32. *Public Access to Robotic Camera Fosters Discourse*, The Daily Californian, By ANGELA CHEN, Contributing Writer, Wednesday, October 6, 2004
33. *10,000 People, One Eye*, Computer Power User Magazine, Sep, 2004
34. *Tele-Twister project proves that fun and games can also be educational*, Berkeley Engineering News, October 6, 2003, Vol. 74, No. 7F.
35. *Sharing A Vision* by David Pescovitz, Volume 3, Issue 5, June/July 2003, Lab Notes, College of Engineering, Berkeley
36. *Robotic Tele-actor: A virtual tour guide with soul*, Forefront Magazine (UC Berkeley Alumni Magazine), Fall 2002
37. *Who's In Control?* Rhizome Online, Feb 12, 2003
38. *Tele-actor? tours - the next best thing to being there?*, Berkeleyan, Apr.24, 2002
39. *TechTV report*, TechTV, Spring 2002
40. *Your wish is my command*, New Scientist, Dec. 22, 2001
41. *Let's Take a Walk to a New Frontier*, LA Times, Dec. 13, 2001
42. *Robots: It's an Art Thing*, Wired News, Nov. 12, 2001
43. *Being There*, Business 2.0, Oct, 2001