Nathaniel D. Bird, Ph.D.

CONTACT INFORMATION

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Ohio Northern University
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EDUCATION

University of Minnesota, Minneapolis, Minnesota

Ph.D., Computer Science (October 2009)

- Dissertation Title: "Calibration and Component Placement in Structured Light Systems for 3D Reconstruction Tasks"
- Advisor: Nikos Papanikolopoulos
- Minor: Psychology

M.S., Computer Science (May 2006)

- Thesis Title: "Detection of Loitering Individuals in Public Transportation Areas"
- Advisor: Nikos Papanikolopoulos
- Awards: Matthew J. Huber Award for Excellence in Transportation Research and Education, 2005 ITS Student of the Year

Ohio Northern University, Ada, Ohio

B.S., Computer Engineering *with High Distinction* (May 2003)

- Minors: Applied Mathematics, Physics
- Honors: Tau Beta Pi, Phi Kappa Phi, Sigma Pi Sigma, Phi Eta Sigma

RESEARCH INTERESTS

Computer vision, human activities recognition, medical imaging, robotics, structured light systems

JOURNAL PUBLICATIONS

K. Cannon, M. A. LaPoint, N. Bird, K. Panciera, H. Veeraraghavan, N. Papanikolopoulos, and M. Gini, "Using Robots to Raise Interest in Technology Among Underrepresented Groups", *IEEE Robotics and Automation Magazine*, vol. 2, no. 99, pp. 2-11, 2007.

H. Veeraraghavan, N. Bird, S. Atev, N. Papanikolopoulos, and P. Schrater, "Classifiers for Driver Activity Monitoring", *Transportation Research Part C: Emerging Technologies*, vol. 15, no. 1, pp. 51-67, February 2007.

N. Bird, O. Masoud, N. Papanikolopoulos, and A. Isaacs, "Detection of Loitering Individuals in Public Transportation Areas", *IEEE Trans. Intelligent Transportation Systems*, vol. 6, no. 2, pp. 167-177, June 2005.

N. Bird and N. Papanikolopoulos, "Optimal Image-Based Euclidean Calibration of Structured Light Systems in General Scenes", *IEEE Trans. Automation Science and Engineering*, **submitted**.

CONFERENCE PUBLICATIONS

N. Bird and N. Papanikolopoulos, "Placement Quality in Structured Light Systems", *Proc. IEEE/RSJ Conf. Intelligent Robots and Systems (IROS 2009)*, October 2009.

N. Bird, S. Atev, N. Caramelli, R. Martin, O. Masoud, and N. Papanikolopoulos, "Real-Time, Online Detection of Abandoned Objects in Public Areas", *Proc. IEEE Conf. Robotics and Automation (ICRA 2006)*, pp. 3775-3780, May 2006.

K. Cannon, M. A. LaPoint, N. Bird, K. Panciera, H. Veeraraghavan, and N. Papanikolopoulos, "No Fear: University of Minnesota Robotics Day Camp Introduces Local Youth to Hands-On Technologies", *Proc. IEEE Conf. Robotics and Automation (ICRA 2006)*, pp. 363-368, May 2006.

H. Veeraraghavan, S Atev, N. Bird, P. Schrater, and N. Papanikolopoulos, "Driver Activity Monitoring through Supervised and Unsupervised Learning", *Proc. IEEE Conf. Intelligent Transportation Systems (ITSC 2005)*, pp. 895-900, September 2005.

G. Gasser, N. Bird, O. Masoud, and N. Papanikolopoulos, "Human Activities Monitoring at Bus Stops", *Proc. IEEE Conf. Robotics and Automation (ICRA 2004)*, pp. 90-95, April 2004.

N. Bird, E. Miller, P. Pfeiffer, and S. Vemuru, "Channel Routing with Crosstalk Considerations", *Proc. Int'l Conf. VLSI*, pp. 119-124, 2003.

N. Bird and N. Papanikolopoulos, "Calibration of Structured Light Systems in Unconstrained Scenes", *IEEE Conf. Robotics and Automation*, **submitted**.

Video Proceeding

S. Herbert, N. Bird, A. Drenner, and N. Papanikolopoulos, "A Search and Rescue Robot", *Proc. IEEE Conf. Robotics and Automation (ICRA 2009)*, May 2009.

Teaching Experience

Ohio Northern University, Ada, Ohio

Assistant Professor of Computer Science **November 2009–Present**

- Courses taught: Introduction to programming; introduction to data structures and algorithms.

University of Minnesota, Minneapolis, Minnesota

Technology Day Camp Co-Coordinator **Summer 2008, Summer 2009**

- A week-long day camp to get middle school students from underrepresented backgrounds interested in computer science. Expanded to three weeks in 2009.
- Duties included: planning, developing curriculum, organizing volunteers, and leading the camp.
- For more information on the camp, see http://techcamp.cs.umn.edu.

Teaching Assistant, CSci 5561: Computer Vision **Spring 2008**

Teaching Assistant, CSci 1901: Introduction to Programming **Summer 2007**

Teaching Assistant, CSci 5551: Artificial Intelligence I **Fall 2006, Spring 2007**

Research Experience

University of Minnesota, Minneapolis, Minnesota

Graduate Research Assistant **September 2003 to November 2009**

- Currently developing a full-body patient tracking system for medical applications.
- Developed a large vision-based human activities monitoring system for the Department of Homeland Security, comprising of over 100 cameras and many detected behaviors.
- Developed vision algorithms to detect distracting behavior in motorists.
- Developed a vision system to monitor for suspicious behavior at bus stops.

Peer Review

Served as a reviewer for the following publications and conferences: *IEEE Trans. Circuits and Systems for Video Technology (CSVT)*, *Journal of Computer Science and Technology (JCST)*, *IEEE Conf. Robotics and Automation (ICRA)*, *IEEE Conf. Intelligent Transportation Systems (ITSC)*, *IEEE/RSJ Int'l Conf. Intelligent Robots and Systems (IROS)*.

Other Leadership Experience

President, Board of Directors, Franklin Housing Cooperative, 2009

- Essentially a 140 unit home-owners association.

Written Preliminary Exam Review Committee, 2008–2009