

Jeremiah J. Neubert, Ph.D., EIT

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RESEARCH INTERESTS	Machine Vision, Image Processing, Intelligent Systems, Machine Learning, Robotics, Automation, Process Design, Controls	
EDUCATION	University of Wisconsin , Madison, Wisconsin USA Ph.D., Mechanical Engineering, Dec. 2005 <ul style="list-style-type: none">• Dissertation Topic: "Visual Modulation of Motion"• Adviser: Nicola J. Ferrier M.S., Computer Science, May 2003 M.S., Mechanical Engineering, Dec. 2001 <ul style="list-style-type: none">• Thesis Topic: "Modeling and Calibration of an Active Stereo Vision System"• Adviser: Nicola J. Ferrier Saint Cloud State University , Saint Cloud, Minnesota USA B.S., Manufacturing Engineering, May, 1999 <ul style="list-style-type: none">• Senior Design Topic: "The Split Ram Process"	
HONORS AND AWARDS	Graduate Student Mentor Award, 2004 Department of Mechanical Engineering Alexander Cowie Fellow, 2001 National Science Foundation Travel Scholarship, 2001 National Science Foundation K-Through-Infinity Fellow, 2000	
ACADEMIC EXPERIENCE	Machine Intelligence Lab , Cambridge UK <i>Research Associate</i> Nov 2005 - Present Aiding graduate students in their research. Developing a distributed augmented reality system for industrial applications which included the construction of robust tracking systems for use with handheld devices instrumented with a camera and inertial sensor. University of Wisconsin , Madison, Wisconsin USA <i>Research Assistant</i> Aug 2001 - Nov 2005 Performed research in stereo calibration, scene reconstruction, visual servoing, image processing, and medical imaging. Lab duties included software development, system administration, lab outreach, and seminar organization. University of Wisconsin , Madison, Wisconsin USA <i>Teaching Assistant</i> Sept 1999 - June 2003 Courses for Mechanical Engineering in industrial automation and robotics. Responsibilities included operating industrial equipment, creating laboratories, writing exams, software development, grading, and presenting lectures. <ul style="list-style-type: none">• 314 Mechanical Engineering, Fall 1999 - Spring 2000.• 439 Mechanical Engineering, Spring 2003. University of Wisconsin , Madison, Wisconsin USA <i>NSF K-Through-Infinity Fellow</i> June 2000 - Aug 2001 Duties included promoting innovative approaches to K-12 math, science, engineering, and technology education by working with teachers in local schools to help them develop curricula.	

St. Cloud State University, St. Cloud, Minnesota USA

Tutor/Grader

Jan 1997 - May 1999

Worked in the Math, Manufacturing, and Electrical Engineering Departments giving exams, tutoring students, and grading homework in addition to standing in for professors during absences. Topics covered included introduction to programming, general mathematics, statics, and dynamics.

PUBLICATIONS

J. Neubert and N. J. Ferrier "Direct Mapping of Visual Input to Motor Torques," *Proceedings of the International Conference on Pattern Recognition*, pp. 634-638, 2006

J. Neubert and T. Drummond "Using Backlight Intensity for Device Identification," *IEEE and ACM International Symposium on Mixed and Augmented Reality*, 2006

J. Neubert, P. Ravindran, and N. J. Ferrier, "Task Specification for Visually Guided Grasping," *Proceedings of the IASTED International Conference on Robotics and Applications*, pp. 35-40, 2003

J. Neubert and N. J. Ferrier, "Robust active stereo calibration," *Proceedings of the IEEE International Conference on Robotics and Automation*, Vol. 3, pp. 2525-2531, 2002

J. Neubert, T. Hammond, N. Guse, Y. Do, Y. Hu, and N. J. Ferrier, "Automatic Training of a Neural Net for Active Stereo 3D Reconstruction," *Proceedings of the IEEE International Conference on Robotics and Automation*, Vol. 2, pp. 2140-2146, 2001

Y. Do, J. Neubert, N. J. Ferrier, and Y. Hu, "Camera Calibration Where Practical Uncertainties Exist in Camera Model and Calibration Data," *Proceedings of the IEEE Conference on Mechatronics and Machine Vision in Practice*, pp. 491-495, 2001

N. J. Ferrier, J. Neubert, and Y. Hu, "Artificial Parietal Cortex Neurons for 3D Reconstruction," *Proceedings of the ASME Conference on Artificial Neural Networks in Engineering*, 2001

J. Neubert, C. Widstrand, A. Pumper, C. Swanson, and A. Ellis, "Integrating Materials Science into the High School Chemistry Curriculum," *Proceedings of the American Society for Engineering Education Annual Conference and Exposition*, 2001

PRESENTATIONS

"Applying to Graduate School," invited talk at Saint Cloud State University, Saint Cloud, Minnesota, February 2005

"Task Specification for Visually Guided Grasping," *IASTED International Conference on Robotics and Applications*, Salzburg, Austria, June 2003

"Reconstruction with an Active Stereo Head," University of Wisconsin Robotics Seminar, Madison, Wisconsin, November 2002

"Robust Active Stereo Calibration," *IEEE International Conference on Robotics and Automation*, Washington, DC, May 2002

"Artificial Parietal Cortex Neurons for 3D Reconstruction," *ASME Conference on Artificial Neural Networks in Engineering*, Saint Louis, Missouri, November 2001

"Integrating Materials Science into the High School Chemistry Curriculum," *American Society for Engineering Education Annual Conference and Exposition*, Albuquerque, New Mexico, June 2001

“Automatic Training of a Neural Net for Active Stereo 3D Reconstruction,” *IEEE International Conference on Robotics and Automation*, Seoul, Korea, May 2001

PROFESSIONAL
EXPERIENCE

Department of Ophthalmology and Visual Sciences, Madison, Wisconsin USA
Research Scientist **Aug 2002 - Feb 2003**
Development of image processing software for automated measurement of vessels from digital images of the retina.

Wisconsin Center for Space Automation and Robotics, Madison, Wisconsin USA
Research Scientist **Jan 2000 - Aug 2000**
Design of drive system for a specialized vehicle to facilitate the collection of DNA data from genetically engineered soybeans.

Lakeland Mold Company, Brainerd, Minnesota USA
Process Design Engineer **Sept 1998 - May 1999**
Developed a new technique for the casting of rotational molds beyond the capability of traditional methods.

The Antioch Company, Saint Cloud, Minnesota USA
Summer Researcher **May 1998 - Aug 1998**
Researcher in product development. Duties included designing products, building prototypes, finite element analysis, and cost estimation.

Alexandria Extrusion, Alexandria, Minnesota USA
Statistical Process Control Analyst **Dec 1996 - Aug 1997**
Gathered data for statistical analysis of various processes in the production cycle. Duties included monitoring cooling rates, testing material properties, design of experiments, and quality control.

COMMUNITY
OUTREACH

Madison PEOPLE Program, Madison, WI
Taught classes for minority students and women in engineering and science. Acquired more than \$3000 in donated equipment from industry.

Georgia O’Keeffe Middle School, Madison, WI
Organized a nine week, after school program on robotics and sensors for middle school students.

DoIT Information Technology Academy, Madison, WI
Provided a two day robotics seminar for minority students with an interest in engineering.

SWE Horizons Program, Saint Cloud, MN
Introduced high school girls to Engineering

Sauk Rapids High School, Sauk Rapids, MN
Worked with high school students instructing them in Autocad.

SKILLS

- Computer Languages: Java, C, C++, Fortran, Unix Scripts, Matlab, Python, some use of VHDL.
- Computer Libraries/Packages: Java3D, OpenGL, FLTK, CORBA, IPL, LINPACK, Visual Studio, GCC, Solid Works, Autocad, Mentor Graphics, V4L2 (Meteor Frame Grabber), RAW1394 for Linux
- Hardware Integration: CAD/CAM systems, CRS A465, various CCD cameras, RWI B21 robot, various industrial sensors, Directed Perception pan/tilt unit
- Network Administration: Linux, Solaris, HP/UX, Unix/Linux and Windows integration, Samba, NFS

INTERESTS

Running, Ice Hockey, Ice Fishing, Cooking, Camping

REFERENCES

Available upon request.