

GORANG GANDHI

OBJECTIVE: Seeking a full time position in robotics, controls, or software design.

EDUCATION

Master of Science in Electrical Engineering **May 2009**
University of Southern California, Los Angeles, California
Cumulative GPA: 4.0/4.0

Bachelor of Science in Electrical Engineering, Summa Cum Laude, Minor in Mathematics **May 2007**
University of Florida, Gainesville, Florida
Cumulative GPA: 3.95/4.0
Honors Thesis: *Koolio: An Autonomous Delivery Refrigerator Robot*

SKILLS: C/C++, Matlab, Linux, Java, VHDL, Protel, Ladder Logic, AutoCAD, Visual Basic, Prolog, Assembly, Vxworks, Python, XML, Junit, SWT

COURSEWORK: Robotics (3 courses), Multivariable/Robust Control, Linear Control, State Variable Control, Random Processes, Probability, AI, Linear Algebra (3 courses), Numerical Analysis, Complex Variables, Programming (C++/Java).

EXPERIENCE

Software Engineer June 2009 - Present
Jet Propulsion Lab, Pasadena, California

- Made additions to the MDS Java framework and Airlock/ATHLETE control systems, which included the ability to detect faults and re-plan during runtime. Converted a C++ graphing framework to Java for directed, undirected, and membership equivalence graphs. Created a Graph State Variable framework in Java to keep track of reference frames and Six-DOF transformations utilizing the graphing framework, which will be used for multi-robot and human coordination.
- Worked with another team member to create a Matlab Simulink model for instrument data compression/power consumption for the Jupiter Europa Orbiter.
- Worked as part of the MPC development team to make additions to the Java software to accommodate Mars Science Laboratory needs. Reverse engineered a Python based document generation tool, and created a more sophisticated tool in Java. Performed Junit tests on existing Java classes.

Research Assistant: Interaction Lab/Computational Learning & Motor Control Lab/RESL August 2007 - May 2009
University of Southern California, Los Angeles, California

- Wrote C code to implement a adaptive controller for a humanoid head platform.
- Implemented several machine learning algorithms in Matlab, which included sparse versions of the Gaussian Process.
- Performed a comparative study of Gaussian Processes, Support/Relevance Vector Machines, and LWPR.
- Implemented a Kalman Filter in C++/Matlab to model disturbances acting on an autonomous boat.
- Performed system identification in Matlab to obtain a more accurate dynamic model of the boat.

Coursework August 2006 - December 2007

- Wrote software in VHDL to create a VGA controller, ALU, counter, adder, and simple computer for a FPGA.
- Created software in Java to implement A-star in a simulated restaurant, which utilized semaphores for resource sharing between agents. Communicated with a Powerloom knowledge representation system for data storage.
- Implemented in Java a polynomial class, a linked-list, various sorts, and other small classes to demonstrate exception handling, recursion, and iteration.

Research Assistant: Machine Intelligence Lab May 2006 - May 2007
University of Florida, Gainesville, Florida

- Worked on an autonomous refrigerator robot, which integrated an LINUX embedded PC, Atmega 128 microprocessor, sonar sensors, compass, web cameras, motors, wireless adapter, and VGA monitor.
- Wrote all of the behavior software in C for obstacle avoidance, PID motor control, and navigation in the hallways.
- Wrote simple vision software in C for color detection utilizing openCV libraries.

Intelligent Machine Design Lab: Machine Intelligence Lab January 2006 - April 2006
University of Florida, Gainesville, Florida

- Designed an autonomous soda retrieving robot, which integrated sensors, a camera, motors, servos, and Atmega128.
- Designed the robot frame in AutoCAD.

- Created various sensor and auxiliary boards using Protel DXP.
- Wrote all of the software in C to follow a line, obstacle avoid, take a remote control command, and detect colors.

Integrated Product and Process Design

August 2005 - April 2006

University of Florida, Gainesville, Florida

- Wrote all the of relay ladder logic sequencing for an Allen Bradley SLC 5/03 programmable logic controller.
- Reverse engineered a wide format EPSON printer to accommodate the system.
- Worked with another team member to create the Visual Basic GUI for the operator of the system.
- Worked with team members to write the software to control the robotic arm.

Control Systems Engineer

May 2005 – August 2005

General Electric, Greenville, South Carolina

- Learned the basics of relay ladder logic and its application to PLC code.
- Learned how the MarkV/VI control systems controlled the startup, shutdown, and synchronization of gas turbines.
- Assisted customers/vendors with questions concerning sequencing of the MarkV/VI controller.

System Reliability Engineer

August 2004 - December 2004

General Electric, Greenville, South Carolina

- Analyzed newly designed gas turbine systems to determine components causing failures.
- Prepared block diagrams representing the system and executed Monte Carlo simulations to determine reliability.

PUBLICATIONS

- L. Zamstein, A. Arroyo, E. Schwartz, S. Keen, B. Sutton, and G. Gandhi, *Koolio: Path planning using reinforcement learning on a real robot platform*, 19th Florida Conference on Recent Advances in Robotics, May 25-26, 2006.
- S. Keen, A. Arroyo, E. Schwartz, W. Ye, L. Zamstein, B. Sutton, G. Shokes, and G. Gandhi, *Koolio: An Autonomous Refrigerator Robot*, 19th Florida Conference on Recent Advances in Robotics, May 25-26, 2006.

AWARDS/AFFILIATIONS

USC Provost Fellowship; UF Honors Program; Florida Bright Futures Scholarship; W.H. Chen Scholarship; ECE Alumni Scholarship; ECE E-Award; 2006 ASME Manufacturing Design Competition Winner

Member of Tau Beta Pi Engineering Honor Society; Volunteered in SECME 2004

Member of IEEE; IEEE robotic competition team member

Member of Phi Eta Sigma National Honor Society

February 2004 - May 2007

December 2003 - May 2007

January 2003 - May 2007