

SUMIT GUPTA

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- OBJECTIVE** Seeking a position that requires technical, analytical, problem solving and leadership skills
- EDUCATION** **M. S. Mechanical and Aerospace Engineering**, University of Florida Dec 06
Minor: **Electrical and Computer Engineering** GPA: 3.75/4.00
Specialization: Nonlinear Control Systems and Robotics
B. E. Mechanical Engineering, Jul 04
Visveshwariah Technological University, Bangalore, India GPA: 3.90/4.00
- SKILLS** **Development Tools:** Matlab, Simulink, Visual Studio.NET, NI Labview, AutoCAD, P-Spice, MicroLogix RSLinx, Netdaq, MathCAD, RobotectPro, SolidWorks, Mechanical Desktop
Programming: C/C++, Matlab, VB.NET, C#, PLC - Delta Tau/ Allen Bradley/ GEFanuc
Operating Systems: Windows 9x/NT/2000/XP/Vista, QNX Neutrino, Linux, Unix, Macintosh
Application Tools: MS Office, LaTeX, Scientific Workplace, Adobe Photoshop, UltraEdit
Equipments: Digital & Analog Oscilloscopes, Multimeter, Signal waveform generators
- WORK EXPERIENCE** **Control Systems Engineer -R&D** Jan 07-Present
Electrical Department, Moore Tool Company Inc., Bridgeport, CT
- **Lead Control System Development for Motion Control of High Precision Drum Lathes**
 - Developed PLCs and motion control programs for high precision multi - axis CNC Vertical & Horizontal Drum Lathes using Delta Tau's Turbo PMAC boards
 - Debugged software and interfaced/troubleshooting hardware
 - Conducted control training programs for machine operators
 - Developed HMI/GUI for machine operator's control panel using Visual Basic.NET
 - Interfaced vision system for tool setting application
 - Prepared operator's manual and procedural documents
 - **Control System Development for Ultra Precision Grinder**
 - Assisted in development of new concept design for prototype, determined design feasibility and testing control capability
 - Developed PLCs and motion control programs for ultra precision grinder using Delta Tau's Turbo PMAC boards
 - Assisted in determining future technical goals by interacting with customers and formulating technical proposals
- Control Systems Engineer -R&D -Intern** Jun 06-Dec 06
Assembly and Test Technology Development, Intel Corporation, Chandler, AZ
- **Control Systems Projects for Platform Process Validation (PPV), Burn-In, Class Test**
 - Designed, developed, and calibrated a model for the device under test (DUT), thermal control unit, and controller that provides optimized Proportional, Integral, Derivative, and sample rate parameters in Simulink using SimPowerSystems and Control Systems toolboxes
 - Developed sufficient correlation of model to physical system and performed performance prediction, controller tuning, and sensitivity studies using Simulink Parameter Estimation toolbox in Simulink
 - Developed and integrated controller parameter auto-tuning and optimization algorithms using Simulink Response Optimization toolbox in Simulink
 - Developed HMI/GUI's using GUIDE in Matlab which allows people with limited controls background to utilize model for parameter optimization and performance prediction

Research Assistant

Aug 04-May 06

Nonlinear Controls and Robotics, Mechanical and Aerospace Engineering, University of Florida

- **Leader of Hardware-in-the-Loop Simulation Project** : funded by Air Force Research Lab
 - Developed software in Visual C++ for real time image acquisition, feature point detection and tracking used for computer vision based guidance, navigation and control of Micro Air Vehicle (MAV)
 - Developed software in Matlab and Simulink using image processing and signal processing toolboxes for image analysis, feature point detection and tracking and camera calibration
 - Developed camera independent multi-view photogrammetry based visual servo tracking controller for Unmanned Air Vehicle (UAV)/smart-munitions
 - Developed quaternion based regulation and tracking control for UAV
 - Interfacing and integration of hardware and software in the control loop
 - Presented progress report to Eglin Air Force Base project managers
- **Developed passive single camera imaging system for determining motor vehicle speed of a vehicle**
 - Developed algorithm and software in Visual C++ for real time speed detection of a moving vehicle via a single camera using image processing/ computer vision based techniques - funded by Laser Technology

Teaching Assistant

Jan 05-Dec 05

Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL

- Taught classes and graded assignments for courses in Dynamics and Modern Control Systems

Project Fellow

Jan 04-Jun 04

Indian Institute of Science and MS Ramaiah Institute Of Technology, India

- Designed and developed a rotary piston engine - 'Best Project Award' in mechanical engineering

PATENTS

W. Dixon, N. Gans, S. Gupta, "Passive Single Camera Imaging System for Determining Motor Vehicle Speed", U.S. Provisional Patent No. 60/865032, filed November 9, 2006; Patent Cooperation Treaty PCT/US07/83895 filed on November 9th, 2007

ACADEMIC PROJECTS

- Performed moving target detection, classification and tracking for smart-munitions using infrared images in Matlab and Visual C++
- Programmed the GM Fanuc robot and interfaced it with Allen Bradley PLC
- Designed a robust controller to suppress induced loads during cooperative robotic maneuvering of two single link robots carrying a payload in Matlab
- Performed dynamic and sensitivity analysis of two legged cyclist model using AutoLev
- Interfacing Puma 560 robot with real time operating system QNX and QMotor Robotic Toolkit
- Developed software in Matlab for performing forward and reverse kinematic analysis of six link manipulators - Cincinnati Milacron T3-776, GE P60 and Puma
- Developed a displacement wear testing machine for wear studies of materials using a LVDT
- Designed and fabricated a multipurpose paramotor used in surveillance and rescue operations

PUBLICATION **Journal**

- **S. Gupta**, W. E. Dixon, D. Aiken, and G. Hu, "Lyapunov-Based Range Identification For A Paracatadioptric System", *IEEE Transactions on Automatic Control*, Ref. No.: TN07-06-23
- G. Hu, W. E. Dixon, **S. Gupta**, and N. Fitz-Coy, "A Quaternion Formulation for Homography-based Visual Servo Control", *IEEE Transactions on Automatic Control*

Conference

- **S. Gupta**, D. Aiken, G. Hu, and W .E. Dixon, “Lyapunov-Based Range and Motion Identification For A Nonaffine Perspective Dynamic System”, *IEEE American Control Conference*, Minneapolis, Minnesota, 2006
- D. Aiken, **S. Gupta**, G. Hu, and W .E. Dixon , “Lyapunov-Based Range and Motion Identification For A Paracatadioptric Camera”, *IEEE Conference on Decision and Control* , San Diego, California, 2006
- G. Hu, **S. Gupta** , N. Fitz-Coy, and W. E. Dixon, “Lyapunov-Based Visual Servo Tracking Control Via A Quaternion Formulation”, *IEEE Conference on Decision and Control*, San Diego, California, 2006
- S. C. Solanki, W. E. Dixon, C. D. Crane, and **S. Gupta**, “Uncalibrated Visual Servo Control of Robot Manipulators with Uncertain Kinematics”, *IEEE Conference on Decision and Control* , San Diego, California, 2006
- G. Hu, W. E. Dixon, **S. Gupta** and N. Fitz-Coy, “A Quaternion Formulation for Homography-based Visual Servo Control”, *IEEE International Conference on Robotics and Automation*, Orlando, Florida, 2006
- S. Mehta, W. E. Dixon, T. Burks, and **S. Gupta**, “Teach by Zooming Visual Servo Control for an Uncalibrated Camera System”, *AIAA Guidance Navigation and Control Conference*, San Francisco, AIAA-2005-6095, 2005

COURSES

Programming	Programming in C/C++, Object Oriented Programming, Programming and Interfacing Microcontrollers MCS-51, Siemens C166/SGS Thomson ST10
Control System	Nonlinear Control Systems, Control Systems Theory, Automatic Control Engineering, Mechatronics, Applied Controls for Automation and Robotics, Advanced Power and Machinery Control, Industrial Robotics
Management	Total Quality Management, Operations Research, Industrial Management, Production and Operation Management, Project Management
Mechanical	Manufacturing Process, Machine Design, Instrumentation, Heat/ Mass Transfer, Active Thermal Control, Thermodynamics, Fluid Mechanics, Theory of Machines
Machine Vision	Image Processing and Computer Vision, Airborne Sensors and Instrumentation - Remote Sensing and Data Analysis, Pattern Recognition
Dynamics	Geometry and Mechanisms of Robot Manipulators, Analytical Dynamics
Others	Building GUI in Matlab, Statistics, Presentations, Situational Leadership

AWARDS & ACTIVITIES

- Best Achiever Award, Visveswaraiah Technological University Jul 04
- Best Project Award, Visveswaraiah Technological University Jul 04
- Vice President of Grad. Affairs, Indian Student Association, University of Florida May 05-06
- Student exchange program with Belvedere College, Dublin, Ireland May 98
- IEEE student member Present
- Missionaries of charity volunteer for social service Dec 97-Present

REFERENCES

Jeff Luke, Research and Development Engineer, Intel Corporation - jeff.luke@intel.com
Dr. Warren Dixon, Assistant Professor, University of Florida - wdixon@ufl.edu
Wade Ackerman, Research and Development Engineer, Intel Corp.-c.wade.ackerman@intel.com