Jifei Xu

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OBJECTIVE

▪ Experienced and passionate Ph.D. student with strong background in robotics and control and proficient system and programming skills looking for an internship position to apply my extensive research and development skills in innovative robotics design and applications.

EDUCATION

University of Illinois at Urbana-Champaign

Ph.D., Electrical Engineering	Expected: May 2020	
Master of Science, Electrical Engineering	Expected: May 2017	GPA: 3.67
Bachelor of Science, Electrical Engineering	2009-2013	GPA: 3.67

Related Coursework:

▪ Hardware: Sensors and Instrumentation; Digital System Laboratory; Digital IC Design; Power Circuits; Semiconductor Electronics; IC Device Theory & Fabrication; Analog IC Design; Computer System Analysis

▪ Software: Object-Oriented Programming; Database Systems; Assembly Language Programming; Robot Vision; Artificial Intelligence; Control Systems; Speech Processing; Robot Operating System (ROS); Embedded system programming

SKILLS

▪ Programming: C, C++, Python, System Verilog with FPGA board
▪ Software: ROS, Matlab, Simulink, Eagle CAD, Gazebo, Code Composer Studio, NI LabVIEW, Visual Studio, MS Office Suite
▪ Systems: Windows, Linux, macOS

SELECTED PROJECTS

Biped Robot Simulation under ROS and Gazebo (Aug 2015, Present) (Master Thesis Project)

▪ Customized URDF model of a biped robot to reflect a more realistic environment
▪ Designed and implemented the feedback controller and trajectory generator to achieve a stable walking biped robot
▪ Utilized optimal control theory to tune the gains for the best disturbance rejection and system stability
▪ Achieved real time path replanning to compensate for large disturbance thus increase the robustness of the system

Advanced Control and Trajectory Design for an Industrial Robot Arm (Oct-Dec, 2015) Supervisor: Daniel J. Block

▪ Utilized system identification to create a mathematical model of the robot arm for enabling advanced control design
▪ Derived the equation of motion using Lagrangian dynamics and applied it to the controller for gravity compensation
▪ Designed and implemented task space PID control, feed forward control and friction compensation for accurate tracking
▪ Implemented a trajectory design algorithm to ensure continuous force and current for motor and amplifier

Embedded Controller Design for an Industrial Robot Arm (Mar-May, 2015) Supervisor: Daniel J. Block

▪ Designed PCB for a circuit that houses the microcontroller, motor drivers and power circuits
▪ Programmed a PC user interface for easy communication with the embedded controller
▪ Coordinated a team of four by managing people from different background and project milestones

WORK EXPERIENCE

Robotic Software Developer (May-Aug 2017) DJI

▪ Prototyped and implemented real time geo-referencing using Velodyne Puck 16 beam LiDAR and apx-15 sensor
▪ Optimized the system using Nvidia CUDA technology and allow real time geo-mapping of 200k cloud points per second
▪ Designed and developed simulated environment for Lidar and Drone testing using ROS Gazebo and DJI Onboard SDK
▪ Analyzed the system accuracy and stability with real world test flights and collected data

Software Development using ROS (May-Aug 2016) University of Illinois

Control System Laboratory, College of Engineering

▪ Implemented the rhino robot arm hardware interface in C++ using serial communication and ROS
▪ Rapid prototyped new control capabilities and shortened development time considerably
▪ Rigorous documentation for easy maintenance and possible extensions

Course Development Assistant (May-Aug 2015) University of Illinois

"Robot Dynamics and Control" (ME 446) course development

▪ developed programs for manipulation of robot with embedded system

Teaching Assistant (Aug 2013, Present) University of Illinois

"Introduction to Robotics" (ECE 470)