Allison Lyon Thackston

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Seeking a position in the field of

ROBOTICS

Dynamic, qualified engineer with a background in both Electrical and Mechanical engineering seeks a career in robotics that leverages my skills in algorithm development, path planning, collision avoidance, and image processing on embedded systems, Windows, and Linux platforms.

Highly motivated to work hard and seek out challenges, even in high pressure, deadline-driven environments. Excellent leadership, communication and interpersonal skills; ability to develop large projects with organized planning and strategy.

PROFESSIONAL EXPERIENCE

Robotics Engineer   2012-Present

Oceaneering Space Systems, NASA contractor
- Updated kinematics controller to utilize task driven iterative solving methods optimizing for minimum kinetic energy, singularity avoidance, and joint limit avoidance.
- Developed the safety monitoring systems for Robonaut 2 including velocity monitoring, force and torque monitoring, and momentum monitoring.
- Wrote autonomous vision perception algorithms for challenging environments for on orbit ops.
- Designed and implemented a new vision perception architecture, enabling Robonaut to use open source libraries such as OpenCV, LTI-Lib, and SWIFT, as well as proprietary libraries such as HALCON
- Managed interaction with TopCoder for crowd sourcing software development.
- Wrote api and kinematics controller for Robonaut 2 wrist in ROS/Orocos
- Implemented a hybrid force/kinematic controller
- Wrote ROS nodelt driver for MESA imaging SwissRanger and Point Grey Flea cameras

Electrical Engineer   2005-2012

Night Vision Electronic Sensors Directorate, US ARMY
- Acted as Project Manager for image enhancement on handheld devices study. Duties included choosing appropriate sensors, developing a data collection plan, coordinating data collection, selecting appropriate image enhancement algorithms, running a perception study and analyzing findings.
- Developed image processing and target tracking using MATLAB and C code. Research published in 2012 MSS conference under Multi-Waveband Spot Detection with Solar Glint Suppression.
- Designed and developed an embedded surveillance system using military components including a pan tilt, infrared and visual sensors, as well as a laser range finder. Design included sourcing appropriate pc-104 boards, communication between components in serial and Ethernet, and process control in C++.
- Analyzed image metrics such as contrast, target to noise ratio and delta T metrics, and studied their effects on target tracking algorithms.
- Tested and integrated software at remote locations.
- Created verification and validation documentation for simulation software.
- Acquisition Level II Certified, Secret level security clearance

Research Assistant   2007-2009

University of Hawaii at Manoa, Autonomous Systems Lab

- Developed manipulator collision avoidance algorithms using C for path planning applications.
- Integrated camera into target detection and following algorithms using OpenCV and LTI-Lib.
- Created an automatic calibration algorithm for camera using OpenCV.
- Simulated and modeled a dynamic controller for robotic manipulation using Maple and C.

Research Intern
Fuzzy Logic/Neural Networks and Computer Vision   Spring 2005
Georgia Tech

- Used MATLAB and Simulink toolboxes to train a Fuzzy Logic/Neural Network to identify the heading of a UAV based on an external view.

COMPUTER SKILLS

Languages

- Fluent in: C, C++, C#, MATLAB, Python
- Proficient in: Visual Studio .Net, Java, HTML, Lua
- Familiar with: FORTRAN, Perl, Scheme (LISP), ActionScript, Flex, Ruby on Rails, PHP, CSS

Software

- Tools: MATLAB, Simulink, Maple, Microsoft Office, AutoCAD, SolidWorks, PSpice, OpenCV, LTI-Lib, SQL, Visual Studio, Eclipse, ROS, Orocos, KDL, PCL
- Platforms: Linux, Unix, Windows

EDUCATION & ACHIEVEMENTS

M.S. Mechanical Engineering, 2009
UNIVERSITY OF HAWAII AT MANOA

Thesis: *Autonomous Robotic Manipulation: Collision Avoidance*.

Topic covered automatic collision avoidance techniques in a semi-autonomous operation of a 7 degree of freedom robotic manipulator using the novel concept of measure of proximity in solving for actuator position during operation.

B.S. Electrical Engineering, High Honors, 2005
GEORGIA INSTITUTE OF TECHNOLOGY

Notable Activities: Leader in Eta Kappa Nu (ECE Honors Society), IEEE Hardware Team (Robot Team), Leader in Alpha Gamma Delta, National Society of Collegiate Scholars, Tennis Club.

Awards: State of Georgia Governor's Scholarship Recipient, HOPE Scholarship Recipient, Deans List, AP Scholar with Distinction, Georgia Certificate of Merit Winner.