Jonathan Weisz
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To whom it may concern,

I am a PhD- candidate in the Columbia University Robotics Group. My research in this our group focuses on measures of grasp stability under uncertainty, "Human-in-the-Loop" grasping using brain-computer interfaces, and data-driven hand design optimization. Using GraspIt! I have published several papers in these areas in peer reviewed conferences.

One of my primary responsibilities in the lab is managing the integration of the components of our grasping platform, arm trajectory planning, vision, grasp planning, and tactile sensing. I participated in Phase I of the DARPA ARM-S and the DARPA Robotics Challenge. My contributions to the team included work on manipulation and grasp planning, grasp success verification from sensor input, improving software failure tolerance, and user interface development. I am comfortable working in either large team environments or as a solo researcher/developer.

I have am very comfortable in the Ubuntu/Linux environment. Additionally, I am familiar with all aspects of the ROS ecosystem, and have contributed features and bug fixes to many of it's core projects. I am comfortable with many web technologies and am competent in C++, Python, SQL, BASH scripting, and Java, and am reasonably familiar with Javascript, HTML5, and other web technologies.

I have developed code for many different robotic platforms both industrial and research. These include the HUBO, PR2, Kinova-Mico arm, Staubli TX60L arm, a WAM arm, and a custom built dual planar arm produced in the Johns Hopkins Motor Control Lab, which I was largely responsible for constructing.

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Relevant Experience

2009-Present Graduate Research Assistant, Columbia University Robotics Group
Duties: Research robotic grasping and manipulation, BCI interfaces for assistive robotics, and robotic hand design.

2014 Participated in the Darpa Robotics Challenge
Duties: Developed manipulation code for hose attachment task, designed the teleoperation UI for the rough terrain, hose attachment, and helped harden communications ROS communications to handle latency and bandwidth issues.

2013 Research Intern, Willow Garage
Duties: Built simulator for continuous integration testing of experimental service robot platform. Worked on the Robots for Humanity project implementing new features for the pr2 interactive manipulation pipeline.

2011 Summer Programming Intern, Stanford Research Institute
Duties: Developing machine learning tools for closed loop manipulation as part of the DARPA ARM project.

2007-2009 Graduate Research Assistant, University of Southern California Brain-Body Dynamics Lab
Duties: Design studies to explore the control systems which govern human manipulation of unstable objects.

2006 Research Assistant Level II, Johns Hopkins University - Lab for Computational Motor Control.
Duties: Experimental apparatus and software design for real time control of dual planar arm robot.

2005 Undergraduate Research Assistant, Johns Hopkins University – Lab for Computational Motor Control.

Duties: Developed experimental protocol and apparatus for studies on mirror therapy and phantom limb pain on amputee patient population involving design and implementation of a low cost augmented reality system.

Publications

Jonathan Weisz, Alexander G. Barszap, Sanjay S. Joshi, and Peter K. Allen, Single Muscle Site sEMG Interface for Assistive Grasping. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) September 14-18 2014, Chicago.

Youngbum Jun, Jonathan Weisz, Christopher Rasmussen, Peter Allen and Paul Oh, Real-Time Teleop with Non-Prehensile Manipulation, IEEE International Conference on Technologies for Practical Robot Applications (TePRA), April 14 -15, 2014

Jonathan Weisz, Benjamin Shababo., Lixing Dong, Peter K. Allen, Grasping with Your Face, 13th International Symposium on Experimental Robotics (ISER) June 17-21, 2012, Quebec City.

Jonathan Weisz and Peter K. Allen, Pose Error Robust Grasping from Contact Wrench Space Metrics, IEEE International Conference on Robotics and Automation (ICRA) 2012, St. Paul.

Frank L. Hammond III, Jonathan Weisz, Andrés A. de la Llera Kurth, Peter K. Allen,and Robert D. Howe, Towards a Design Optimization Method for Reducing the Mechanical Complexity of Underactuated Robotic Hands , IEEE International Conference on Robotics and Automation (ICRA) 2012, St. Paul.

Hao Dang, Jonathan Weisz, and Peter K. Allen, Blind Grasping: Stable Robotic Grasping Using Tactile Feedback and Hand Kinematics, IEEE International Conference on Robotics and Automation (ICRA), 2011, Shanghai.

Long Wang, Joseph DelPreto, Sam Bhattacharyya, Jonathan Weisz, Peter K. Allen, A highly-underactuated robotic hand with force and joint angle sensors, 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems, Sep. 26-29, 2011, San Francisco.

Peer-reviewed Conference Abstracts

Dayanidhi S, Weisz J, Junker L, Hedberg Å, Forssberg H, Valero-Cuevas FJ. Control of an unstable object with dynamic precision grip: Effect of friction. Poster Session II: Integrative Control of Movement. Proceedings of the Nineteenth Annual Meeting of Society for the Neural Control of Movement, p 116. Poster H-58, Waikoloa, HI, May 1st, 2009.

Dayanidhi S., Weisz J., Junker L., Hedberg Å., Forssberg H., Valero-Cuevas F.J. A hand-held instrumented device to quantify dexterous manipulation for clinical use. Interactive Poster(PFRI16), Rehabilitation Society of North America (RESNA) Conference 2009. New Orleans, LA.

Educational History

Columbia University - expected graduation January, 2015
PhD in Computer Science

University of Southern California - graduated June, 2009
M.S. in Biomedical Engineering

Johns Hopkins University - graduated June, 2006
B.S. in Biomedical Engineering, Materials Science Concentration