

Alexander N. Alspach

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education

Drexel University

Master of Science and Bachelor of Science in Mechanical Engineering & Mechanics

focus Autonomous Systems and Control

lab Drexel Autonomous Systems Lab (DASL) - Dr. Paul Oh

thesis A Humanoid Robot Pushing Model Inspired by Human Motion

Philadelphia, PA, USA

GPA: 3.94 / 4.0

June 2012

experience

SimLab Co. Ltd. Robotics Engineer

Seoul, South Korea 8.2012 - Present

- Hardware engineering, manufacturing and repair for robotic hand, arm and quadruped products
- Develop and maintain robotic hand software for Windows (RoboticsLab), Linux (ROS) and Android
- Build and manage user wikis including tutorials, documentation and customer support information
- Manage international sales and marketing for robotic hand, Allegro Hand, and quadruped, Allegro Dog
- Work closely with customers developing applications for Allegro Hand
- Sales and marketing team for robotics simulation and control software, RoboticsLab

Czech Technical University Exchange Researcher

Prague, Czech Republic 4.2012

- Studied development and usage practices for the lab's internet-accessible multi-robot testbed, SyRoTek
- Documented challenges and features relevant to a Drexel-based internet accessible HUBO2 humanoid testbed
- Presented user-perspective suggestions for improvements to the system
- Studied and implemented Smooth Nearness Diagram (SND) navigation
- Developed MATLAB control interface for the ROS-based SyRoTek system

KAIST Humanoid Robotics (HUBO) Lab Robotics Researcher

Daejeon, South Korea 9.2010 - 3.2011

- Studied the manufacture and assembly processes of Korea's most advanced humanoid robot platform, HUBO2
- Designed and developed website for multi-university collaboration and sharing of HUBO related research and tools
- Composed comprehensive assembly and setup manuals to accompany HUBOs exported from KAIST to U.S. universities
- Learned troubleshooting, maintenance and repair methods as part of the U.S. team of HUBO specialists
- Contributed to international awareness, engagement and collaboration in the field of robotics

Synthes, Inc. Product Development Engineering Intern (Spine Division)

West Chester, PA, USA 9.2009 - 3.2010

- Co-Investigator for a high-priority biomechanical product failure analysis and next generation design
- Designed and supervised mechanical tests and design validation of products for FDA approval
- Designed mechanical test fixtures and produced engineering drawings for in house manufacturing
- Used Pro/Engineer to produce spinal implant and surgical instrument concepts for design review, prototyping, failure analysis and testing
- Performed cadaveric tests to validate and refine implant and tool prototypes and surgical methods

Max Levy Autograph, Inc. Research and Design Engineering Intern

Philadelphia, PA, USA 9.2008 - 3.2009

- Designed processes and methodologies for depositing thin film resistors and circuits onto flexible substrates
- Conducted multivariate experiments; collected and analyzed data to refine manufacturing processes and optimize final products
- Designed tooling for mechanical devices and fixtures and created technical drawings for manufacturing
- Assisted in design, maintenance, installation and repair of facility systems and machinery

Drexel Autonomous Systems Lab (DASL) Robotics Researcher

Philadelphia, PA, USA 3.2008 - 6.2012

- Part of international research, presentation, maintenance and training teams for humanoids HUBO2, HUBO+, MiniHUBO and DARwIn-OP
- Manufactured and assembled miniature humanoid, MiniHUBO, and developed manipulation, navigation and dynamic walking algorithms
- Designed, manufactured and programmed multiple robotic systems including force/torque sensing feet and a drivable vehicle for miniature humanoids
- Designed and built active 3-axis gantry for testing miniature humanoids, MMUAVs and vision system algorithms
- Co-founded and taught 3D design and CNC manufacturing courses for new and prospective lab members

publications

- Jun, Y., Alspach, A., Oh, P.Y., "Controlling and Maximizing the Humanoid Robot Pushing Force by Postures", Proc. The 9th Int. Conf. on Ubiquitous Robots and Ambient Intelligence (URAI), Daejeon, South Korea, Nov. 2012.
- Ellenberg, R., Sherbert, R., Oh, P.Y., Alspach, A., Gross, R., "A Common Interface for Humanoid Simulation and Hardware", Proc. IEEE-RAS Int. Conf. Humanoid Robotics, Nashville, TN, Dec. 2010.

skills

code C++, MATLAB, Python, MediaWiki markup, HTML, CSS
cad & cam Inventor, Pro/E, Solidworks, AutoCAD, SketchUp, Mastercam (w/ CNC experience)
robotics ROS, Webots, RoboticsLab, V-rep
design Photoshop, Illustrator, Dreamweaver, 3ds Max

