Alexander Alspach

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education

Drexel University — **Philadelphia, PA**
Master of Science and Bachelor of Science in Mechanical Engineering & Mechanics — GPA 3.94 / 4.0
June 2012

focus Autonomous Systems and Control

lab Drexel Autonomous Systems Lab (DASL) - Dr. Paul Oh
thesis A Humanoid Robot Pushing Model Inspired by Human Motion

experience

Disney Research Robotics Research Associate — **Pittsburgh, PA** 10.2014 - Present

- Humanoid and soft robotics research and hardware development
- Support the efforts of various researchers in robotics and other fields

SimLab Co. Ltd. Robotics Engineer — **Seoul, South Korea** 8.2012 - 9.2014

- Hardware engineering, manufacturing and repair for robotic hand, arm and quadruped products
- Developed and maintained robotic hand software for Windows (RoboticsLab), Linux (ROS) and Android
- Built and managed user wikis including tutorials, documentation and customer support information
- Managed international sales and marketing for robotic hand, Allegro Hand, and quadruped, Allegro Dog
- User interface design and software development for a toolset that allows digital artists to animate high degree of freedom robots (Maverick)
- Worked closely with professional artists and producers to create a comfortable interface that inspires creative and productive results

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** 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** 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** 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

skills

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