

Alexander 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

GPA 3.94 / 4.0

June 2012

experience

Toyota Research Institute [TRI] Robotics Hardware Engineer

Cambridge, MA 1.2017 - Present

- Research and hardware development of soft sensors for robust manipulation and physical interaction
- Managing the buildout and equipment for a new robotics lab based in Cambridge

Disney Research Robotics Research Associate

Pittsburgh, PA 10.2014 - 12.2016

- 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 documentation and software for Windows (RoboticsLab), Linux (ROS) and Android
- 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 facilitates 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 Nearest Neighbor Diagram (SNN) navigation

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
- Built comprehensive online 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
- 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, methodologies and mechanical equipment 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
- 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