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## Experience

### Drexel University

*Mechanical Engineer/Machine Shop Manager*

**Philadelphia, PA**

*July 2012 - Present*

- Manufactured a complete Hubo++ Humanoid robot, funded by Major Research Infrastructure Recovery and Reinvestment (#CNS-0960061)
- Performed all tooling and fixtures in-house to machine 85% of mechanical components
- Maintain metal and wood shop equipment for Drexel Autonomous Systems Lab

### Drexel Autonomous Systems Laboratory

*Researcher*

**Philadelphia, PA**

*Sept 2007 - June 2012*

- Design and manufacturing support for Humanoid robotics and Unmanned Aerial Vehicles
- Student Shop Manager 2009-2012, Student training and tool maintenance
- Developed CAD/CAM/CNC Manufacturing curriculum, Taught for four years

### National Instruments

*Intern/Researcher*

**Austin, TX**

*Jan 2010 - March 2010*

- Integrated Labview Robotics suite with miniature humanoid robot actuators
- Published work in Journal of International Society for Research in Science and Technology

### Hubo Lab

*Co-Op Researcher*

**Daejeon, South Korea**

*Sept 2008 - March 2009*

- Developed 3D solid Model of early Hubo Humanoid robot and learned Hubo manufacture process
- Designed and manufactured miniature walking robot for Robogames 2009

### Senior Design: Hubo Skewed Rotation Plane Joint

**Sept 2011 - April 2012**

- Developed an innovative spine substitute for Hubo Humanoid robot
- A combination of compact rotating wedges allowed spine joint to bend in all directions while not requiring high holding torque at final pose
- Designed and fabricated complete joint that merged with teams inverse kinematic model and simulation

### FIRST Robotics team 2234

**Jan 2013 - Mar 2013**

- Helped with CAD training, design and CNC Manufacturing

### Say Yes to Education

**Jan 2013 - April 2013**

- Weekly session with student from intercity Philadelphia to encourage importance of school and engineering

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## Education

### Drexel University

*Bachelor of Science, Mechanical Engineering*

**Philadelphia, PA**

*June 2012*

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## Skills

**Shop Skills:** Tormach PCNC 1100 CNC Mill, Manual Mill, MIG & TIG Welding, Manual Lathe, Vertical Bandsaw, Horizontal Bandsaw, Drill Press, injection molding experience, Power Tools, PCB Milling, Hand Tools

**Software:** Pro-E, MasterCAM X4, G&M Coding, SolidWorks, Autodesk AutoCAD, Autodesk Inventor, Labview

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## Publications

- Ellenberg, R.; Gross, R.J.; Vallett, R.; Nutt, B.; Oh, P. "Development of the Skewed Rotation Plane (SRP) Joint for Humanoid Robots". Technologies for Practical Robot Applications (TePRA). April 2013.
- Gross, R.J.; Falcon, J.; Oh, P. "A Scalable Software Toolkit for Miniature Humanoids". Journal of International Society for Research in Science and Technology. July 2010.