# Minerva Pillai

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## Education:

- **Ph.D. Mechanical Engineering**
  - University of California, Berkeley    Expected Jun 2013
- **M.S. Mechanical Engineering**
  - University of California, Berkeley    Dec 2010    GPA **3.9/4.0**
- **B.S. Mechanical Engineering**
  - University of California, Berkeley    Dec 2007    GPA **3.7/4.0**

## Experience:

**07/2008 – Current   University of California, Berkeley**          *Graduate Researcher*
- Developing energetically passive, autonomous knee joint for exoskeleton technology
- Modeled and analyzed new stabilization system for elderly
- Designed architecture for powered knee-ankle prosthetic
- Worked with a team to develop powered orthosis for paraplegics
- Developed data acquisition system for semi-active prosthetic knee.

**12/2007 – 12/2008   Berkeley Bionics**                              *Engineer*
- Characterized behavior of exoskeleton ankle
- Prototyped new collocated ankle for military exoskeleton

**06/2007 – 12/2007   University of California, Berkeley**        *Undergraduate Researcher*
- Development of semi-active prosthetic knee
- Designed linear hydraulic actuator

## Specialized Courses Taken:

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|---|---|
| Advanced Design and Automation | Advanced Engineering Graphics and Design |
| Computer Vision | Real Time Control Systems |
| Design of Electromechanical Devices | Human Design Factors |
| Robotics | BioElectronics |

## Skills and Abilities:

- Solid Modeling Software: Expertise in SolidWorks,  Experience in Pro Engineer, Maya
- Programming Languages: MATLAB,  C, Labview, Experience with C++ and Python
- Experience with MasterCam, CNC milling  and manual machining

## Academic Honors and Achievements:

- National Science Foundation Graduate Research Fellow 2009
- Tau Beta Pi Engineering Honor Society

## Patents and Papers:

- Semi-actuated transfemoral prosthetic knee –  US Patent 8231688 (Issue date Jul 31, 2012)
- "Design of a Semi-Active knee ankle prosthesis" M Pillai, A Hurwich, H. Kazerooni International Conference in Robotics and Automation 2011
- Powered Lower Extremity Orthotic and Method of Operation- CIP Patent Appln. Serial No. 13/480,160

## Leadership Positions Held

*Fall 2012*
- Graduate Student Instructor  -- Senior Mechatronics Design
  - Responsible for guiding and training senior mechanical engineering students in developing various mechatronics projects.

*Fall 05-Spring 06*
- Executive officer (Secretary) for Society of Women Engineers
  - Responsible for logistics and organization of events and meetings for club


## Course Projects

*Stereo-Vision based depth detection for targeting and robot mapping: Prof. Ruzena Bajscy*

Worked in a multi-disciplinary team to design, build and program an autonomous self-contained toy scale car. Helped design and machine the car with a laser turret system integrated with a yaw and pitch axis. The design of the car was optimized for ease of controls implementation. Calibrated the stereo-cameras for depth detection. Implemented algorithms, in C, to obtain depth information from stereo-cameras and convert coordinates from camera reference frame to laser reference frame and global car reference frame.

*Lesion Detection in MRI Scans : Prof. Ruzena Bajscy*

Developed and implemented a new algorithm, in Matlab, to detect the lesions in new MRI Scans given a set of healthy MRI Scans.

*Stereo-Vision Based Depth Detection on Middlebury Stereo Database: Prof. Jitendra Malik*

Implemented existing algorithm for correspondence search, in Matlab, to create a disparity map of several stereo images in the Middlebury Stereo-Database.

*Data monitoring system for Powered Prosthetic Knee : Instructor George Anwar*

Developed a Labview interface for serial data acquisition from a Ti microcontroller. Designed and implemented a communications protocol between the computer and microcontroller.

*No-Leak Travel Mug : Instructor Peter Michaelian (Senior Design Engineer, Smart Design)*

Worked in a multi-disciplinary team, as lead mechanical designer, to identify deficiencies in current product options. Designed and built mechanisms and prototypes for leak-proof travel mug.