Cosmo Chou

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Objective

Seeking entry into a doctoral program to continue my education in an environment that allows me to pursue research and publication within my fields of interest and acquire the requisite skills and experience to progress to a postdoctoral research position.

Research Interests

Prosthesis design, control, and instrumentation; orthosis design and instrumentation; bio-inspired and soft robotics; inertial sensing; sensor fusion; gait dynamics and kinematics; machine learning-aided stance prediction.

Education

- **University of Alabama** — Tuscaloosa, AL
  Master of Science in Mechanical Engineering — *Aug. 2016 – May 2018*
  - **Thesis**: Novel Design of Sensory Instrumentation for Implementation in Prosthesis Control
- **University of Alabama** — Tuscaloosa, AL
  Bachelor of Science in Mechanical Engineering — *Aug. 2012 – May 2016*
  - **Minors**: Aerospace Engineering and Mechanics, Mathematics

Research Experience

- **Human-Inspired Biorobotics Lab** — University of Alabama
  Head: Xiangrong Shen — *May 2015 - Present*
  - **Active Transfemoral Prosthetic Torque Cell**: Designed a load cell to register axial load and differentiate between heel strike and toe-off to optimize a finite state machine controller for a transfemoral prosthesis.
  - **Gait Capture Instrumentation Orthosis**: Designed a nonrestrictive knee-ankle-foot orthosis to capture biomechanical data without affecting natural gait of the wearer.
  - **Pneumatic Sit-to-Stand Orthosis Control**: Supervised by Tao Shen. Designed and tested a PID-controlled, pneumatically actuated, sit-to-stand assistive device.
- **Agile Robotics Lab** — University of Alabama
  Head: Vishesh Vikas — *April 2017 - Present*
  - **Fabricating Soft Robots With Anisotropic Flexion**: Implemented lattice-hinge laser cut acrylic members in the casting process of a rectangular soft robot.
  - **Driftless Digital Gyroscope Synthesis**: Supervised by David Leech. Acquiring angular acceleration and velocity of a body using four noncoplanar mounted accelerometers.

Teaching Experience

- **University of Alabama** — Tuscaloosa, AL
  Graduate Teaching Assistant — *May 2014 - Present*
  - **ME 350**: Static Machine Components. Designed and taught finite element analysis curriculum for SolidWorks.
  - **ME 360**: Instrumentation and Control Components. Taught lab section.
  - **ME 450**: Dynamic Machine Components. Graded, proctored, and assisted students with projects and curriculum.

Preprints

1. **C. Chou**, et. al. "Fused deposition modeling raster parameter effects on mechanical properties of Taulman bridge nylon.", Dec 2017. [DOI:10.13140/RG.2.2.22504.57605]
2. **C. Chou**, K. Barrett, and D. Mooring. "INDEX: A gesture recognition prototype for robotics control", Dec 2017. [DOI:10.13140/RG.2.2.29215.46241]
3. **C. Chou**, Md R. Haque, Md R. Afsar. "Nonlinear Gait Analysis and Control Applied to Knee Flexion-Extension Cycles", April 2017. [DOI:10.13140/RG.2.2.35926.34888]