Hsin Huei "Claire" Chen

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Education

Cornell University *Expected May 2022*
B.S. Mechanical Engineering
Honors and Awards
Engineering Learning Initiative Research Award Recipient Spring 2021
McMullen Scholar
All semesters

Relevant Skills

Proficient in: Solidworks, AutoDesk Fusion 360, AutoDesk Inventor, MATLAB, ImageJ/Fiji Igor Pro
Conversationally fluent in Mandarin

Professional Experience

Cornell University, Nelly Andarawis-Puri Lab **March 2020 – Present**
Undergraduate Research Assistant, Dr. Nelly Andarawis-Puri *Ithaca, NY*

- Designed Extracellular Matrix (ECM) strain device using Fusion 360
- Conducted image analysis on ImageJ/Fiji to:
  - Analyze Second Harmonic Generation (SHG) images of tendon to determine how the start time of exercise post-fatigue injury can affect tendon structure in terms of increased damage
  - Compare cell proliferation rates between B6 and MRL/MpJ tendon cells to research cell and tendon regeneration
- Designed 3D artificial tendon microtissue system to better investigate cell migration patterns during tendon healing

Yale Medicine Computational Neurophysiology Laboratory **May 2020 – August 2020**
Undergraduate Research Assistant, Dr. Hitten Zaveri *Remote*

- Designed MATLAB programs that used machine learning (random forest, bagged trees) to:
  - Analyze EEG data to be classify signals as noise in order to more accurately predict/detect seizures
  - Find the distance of electrode to seizure onset area

Cornell Autonomous Sailboat Team **March 2020 – Present**
Mechanical Subteam *Ithaca, NY*

- Designed via Solidworks
  - LiDAR casing: Protects the boat's LiDAR sensor from varying water conditions, allows for XYZ while maintaining visibility.
  - Small sail: 60% smaller than our normal sail to accommodate for a 5-8m/s wind speed. An alternative to our normal sized sail, allowing our boat to be modular depending on varying wind conditions
- Machined and fabricated:
  - Sail counterweight: a carbon steel rod with a through hole, allowing it to be mounted along the wind vane, held in place with two piece shaft collars. Counteracts moment induced on mast by sail's center of mass.
  - Keel: Cut from aluminum sheet using band saw, then angle grinded into airfoil shape with a rounded leading edge and sharp trailing edge. Stabilizes and prevents the boat from tilting.

Cornell Lab of Accelerator Sciences & Education **September 2019 – Present**
Undergraduate Research Assistant, Dr. Yulin Li *Ithaca, NY*

- Developed Igor Pro programs to:
  - Analyze Residual Gas Analyzer (RGA) data before/after commissioning (changing components or cleaning) particle accelerator
  - Program an auto-update function for the vacuum components from the synchrotron
- Built void models (negative geometry) of gas pumps using AutoDesk Inventor to be used with MolFlow+ simulations
- Simulated gas flow through beam pump using MolFlow+ to predict how the pressure would change with pump variations

Kennesaw State University, Sooklal Lab **June 2019 – August 2019**
Undergraduate Research Assistant, Dr. Valmiki Sooklal *Marietta, GA*

- Modelled effects of laser irradiation on skin tissue using Solidworks (heat dispersion and penetration depth) to study how laser sutures changes in protein structures within tissue in order to identify effective alternatives to normal sutures or staples.

Publications

1. Marvin JC, Liu EJ, **Chen HH**, Andarawis-Puri N. *MRL/MpJ Tendon-Derived Extracellular Matrix and Secretome Modulate Canonical Healing Tendon Cells Toward Regenerative Behavior*. 66th Orthopaedic Research Society Annual Meeting. Long Beach, CA (Virtual due to COVID-19 Pandemic), February 2021. Podium.
2. Bell R, Suri H, Maloney E, **Chen HH**, Andarawis-Puri N. *Post-Fatigue Injury Increase in Glycosaminoglycan Content is Associated with a Reparative Outcome from Subsequent Therapeutic Exercise*. 66th Orthopaedic Research Society Annual Meeting. Long Beach, CA (Virtual due to COVID-19 Pandemic), February 2021. Podium.

Extracurricular Activities

Co-President of Cornell Pro-Yos: Chinese Diabolo juggling group Jan 2019 – Present
Cellist in Chinese Eastern Music Ensemble Aug 2019 – Present
Secretary of Cornell Taiwanese American Society Aug 2020—Present