Kade E. Wong

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Education

University of Michigan - Ann Arbor	*Class of 2028 (Expected)*

Ph.D. Biomedical Engineering
Concentration in Biotechnology and Systems Biology

University of Michigan - Ann Arbor	*Class of 2023*

M.S.E. Biomedical Engineering
Concentration in Biotechnology and Systems Biology

University of Michigan - Ann Arbor	*Class of 2022*

B.S.E. Biomedical Engineering, *cum laude*
Concentration in Biotechnology and Pharmaceutical Engineering

Work Experience

Research Assistant	*June 2022 to present*

Arnold Lab at the University of Michigan - a research lab using systems engineering approaches to understand variability in the immune response to infection and vaccination
Advisor: Kelly Arnold, Ph.D.
● Current project uses a system of ODEs to model variable immune responses to HIV vaccine trials
● Wrote code from scratch as a method of verifying results with lab partner
● Ran sensitivity analyses and validated model against patient data

Research and Design Biomedical Engineering Intern	*May 2021 to August 2022*

3Di Lab, Clinical Simulation Center, Michigan Medicine, Ann Arbor - a research lab specializing in the advancement and development of medical simulator technology
Advisor: Deborah Rooney, Ph.D.
● Worked with clinicians to design anatomical simulators for use in training medical techniques
● Extensive experience with rapid prototyping, 3D CAD and 3D printing
● Designed a joint system to model an unstable infant hip for training medical students in the Barlow and Ortolani test
● Began development of a model for training clinicians in procedure for pediatric spinal anesthesia

Laboratory Research Volunteer	*January 2020 to March 2020, cut short due to COVID-19*

Extracorporeal Life Support Lab at the University of Michigan, Ann Arbor - a research lab building upon ECLS technology to innovate clinical applications
● Monitored and cared for post-operation sheep in 6-hour shifts
● Took blood samples, ran blood tests, and worked with various life support instruments to respond to and record patient state

Laboratory Research Volunteer	*May 2019 to August 2019*

W. Clay Gustafson Lab at the University of California, San Francisco - a research lab focused on new biological discoveries to develop novel therapies for pediatric cancer
Advisor: W. Clay Gustafson, M.D. Ph.D.
● Performed mouse necropsies to harvest tumors for evaluation and mouse surgeries to implant cancer cells into mice for future study
● Analyzed tissue samples using various techniques to investigate biological response to various drugs

● Grew human tumor cells in culture in a biosafety cabinet using sterile technique for various tasks, including cell counting using both trypan blue and CellTiter-Glo

Programming Languages

MATLAB: Experience applying systems of ODEs to model biological systems.

R: Coursework experience with data manipulation, data imputation, cohort rebalancing, dimensionality reduction, clustering, and machine learning modeling. Used machine learning classifiers on patient data to predict patient responsiveness to potential therapeutics for a term project.

Extracurricular activities

Electrical Hardware Team Member   *January 2020 to April 2022*

Michigan Neuroprosthetics - a student design team focused on developing low-cost myoelectric-controlled prosthetic hands

● Initiator and Project Manager of the Force Sensing Fingertip project, leading the project team towards developing a system to incorporate force sensing fingertips into the hand, potentially allowing for haptic feedback and variable grip control

● Assisted other teammates in learning 3D CAD

Technical Skills

3D Printing: Extensive experience 3D printing various designs as needed on both FDM and SLA printers, using various materials.

3D CAD: Extensive experience using Fusion 360 and SolidWorks to design various models, including part of a prototype for a prosthetic hand, a mold for a silicone fingertip, and a prototype for a hip implant. Limited experience with generative design, used for part of the fingers of a prosthetic hand prototype.

Circuit Prototyping: Experience using Arduino and basic circuitry to test various electronic components such as servo motors, infrared remote controls, and infrared proximity sensors. Experience using lab equipment such as function generators and oscilloscopes, and building basic filters and amplifiers.

Finite Element Analysis: Limited experience using COMSOL Multiphysics and Fusion 360 Simulation to analyze component reactions to various loads, including the stress analysis of a prototype hip implant.

Rapid Prototyping: Experience soldering, using microcontrollers, CAD programs, and silicone to design and fabricate prototypes for various projects with physical and electronic components.

Wet lab experience: Comfortable using sterile technique in a biosafety cabinet, and various other techniques.

Awards

- ● Won first prize in the Fusion 360 Design Award during the University of Michigan's 2021 Makeathon
- ● Won third prize for the CAD Competition during the University of Michigan's 2021 Makeathon