WILLIAM HUANG

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EDUCATION

University of California, Los Angeles September 2024 – Present
M.S./Ph.D. in Electrical and Computer Engineering *Los Angeles, CA*

University of California, Los Angeles September 2020 – June 2024
B.S. in Computer Engineering, *Cum Laude* (GPA: 3.92/4.00) *Los Angeles, CA*

RESEARCH EXPERIENCE

University of California, Los Angeles December 2021 – Present
Research Assistant, Advised by Prof. Yang Zhang *Los Angeles, CA*

- Design data-driven approaches for personalizing mobility technologies through human-centric AI simulations.
- Simulated motor unit recruitment in hand fatigue through physics simulations of user movements in MuJoCo.
- Developed a configurable synthetic data generator in Unity for human-centric computer vision in wheelchair users.
- Demonstrated the validity of fine-tuning computer vision models with synthetic wheelchair user data to improve pose estimation (mAP +7.64%) and human detection (mAP +98.21%) performance on wheelchair users.

University of California, Los Angeles February 2023 – December 2023
Research Assistant, Advised by Prof. Vwani P. Roychowdhury *Los Angeles, CA*

- Tested and documented the user experience of a novel neural signals processing application for spike detection.
- Optimized training time and cleaned code of motion generation models through GPU acceleration.
- Led effort to unify 43 hours of SMPL motion capture sequences and labels into 6D joint representation.

University of California, Los Angeles September 2020 – July 2021
Research Assistant, Advised by Prof. Xiang 'Anthony' Chen *Los Angeles, CA*

- Analyzed predictors of problem gambling through time series anomaly detection in the activity of users on daily fantasy sports to discover correlations between "sawtooth" shaped activity trends and gambling addiction.
- Investigated ensemble machine learning algorithms to identify and predict problem gambling activity.

University of California, Irvine June 2020 – June 2021
Research Assistant, Advised by Prof. Edwin S. Monuki *Irvine, CA*

- Developed a human-centered annotation tool to categorize morphologies of Biondi bodies, reducing data collection time by 70% and reducing repetitive wrist strain.
- Designed a full user experience and relevant annotation tools to sample and count vacuoles in glial cells.
- Developed a data standard and pipeline for deep learning classification of biondi bodies, unifying over 15,000 prior manual annotations from 50 trials and all future works.

PUBLICATIONS

William Huang, Sam Ghahremani, Siyou Pei, and Yang Zhang. "WheelPose: Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users". In: *Proceedings of the CHI Conference on Human Factors in Computing Systems*. CHI '24. New York, NY, USA: Association for Computing Machinery, May 2024, pp. 1–25. ISBN: 9798400703300. DOI: 10.1145/3613904.3642555.

Deborah K. Fagan, Anastasia Bernat, Brett C. Simpson, Randy K. Tran, John Wilson, **William Huang**, Clara L. Stickney, David LePoire, Mark MacDonald, R. D. Hildebrand, and Hoffman Edward. "Sample Planning for Transportation Accident Environmental Characterization Using RISKIND and VSP". In: *Proceedings of the Waste Management Symposia*. WMS 2024. Phoenix, AZ, USA: Waste Management Symposia, Mar. 2024.

Michael J. Neel, Brett A. Johnson, Natarsha Vukalovich, Parastou Porahang, Chloe Zhao, **William Huang**, Sam Ghahremani, Andy Lin, Olivia Sandhu, Binh Nguyen, Kasra Pejhanfar, Joni L. Ricks-oddie, Peter Chang, and Edwin S. Monuki. "Biondi body amyloid is spatially clustered in the human choroid plexus: A manual and deep learning-based study". In: *Manuscript in preparation* (2024).

Michael J. Neel, Brett A. Johnson, Todd Soo, Irene Nguyen, Natarsha Vukalovich, **William Huang**, Sam Ghahremani, Kimia Keshvardoot, Shuhao Chen, Zhohaer Muttalib, Seongjoon Won, Sara Khan, Michael Phelan, and Edwin S. Monuki. "Individual and Alzheimer's disease-related differences in Biondi body amyloid morphologies in human choroid plexus epithelial cells". In: *Manuscript in preparation* (2024).

Brett A. Johnson, Michael J. Neel, Todd Soo, Parastou Porahang, Frances A. Goyokpin, Sara Khan, Ryan S. Salehi, Nicolas B. Maramica, **William Huang**, Sam Ghahremani, Peter Chang, and Edwin S. Monuki. "Lipid storage by the human choroid plexus". In: *Manuscript in preparation* (2024).

Michael J. Neel, Brett A. Johnson, Jessica M. Yeung, Aarij Gora, Ashley Nguyen, Juslyn Chan, Victoria Espericueta, Sam Ghahremani, **William Huang**, Jonathan Zebroski, Jackson Sousa, Nathan Schacherl, Kean Ehsani, Christina M. Magana-Ramirez, Peter Chang, Daniel Gillen, and Edwin S. Monuki. "Negative association between nodular stromal fibrosis and large lipid droplets in human choroid plexus epithelial cells". In: *Manuscript in preparation* (2024).

POSTERS, DEMOS, EXTENDED ABSTRACTS

William Huang, Sam Ghahremani, Siyou Pei, and Yang Zhang. *Users in Wheelchairs (UIW) - a human centered RGB dataset of wheelchair users*. 2023.

Caitlin K. Chen, Kassidy M. Ford, Leela M. Wong, Eric L. Zhao, **William Huang**, and Daniel Eisenberg. *Differences in drug and alcohol consumption among college students during the COVID-19 pandemic*. 2022.

PROFESSIONAL EXPERIENCE

Pacific Northwest National Laboratory June 2023 – December 2023
Applied Decisions Systems and Analytics Intern *Virtual / Richland, WA*

- Optimized big data processing of always-on gas, temperature, humidity, and pressure sensor arrays through high performance computing to reduce processing time by 97% and enable aggregate analytics.
- Co-authored an analysis on spatial plume distributions of particulate spread in waste transportation accidents.
- Conducted software testing of energy resilience model (NAERM) web services for deployment to energy partners.

Intel Corporation January 2022 – September 2022
Biomechanics Co-Op *Virtual / Santa Clara, CA*

- Extracted baseball, golf, running, performance metrics using posture data from single camera video capture.
- Fused 2D and 3D posture data to address poor prediction performance in elderly populations for rehabilitation data capture, reaching an accuracy of 98%.
- Designed filtering algorithms for noisy posture data to improve the accuracy of high speed angular data by 20%.
- Managed the first on-site commercial release of Intel 3D Athlete Tracking motion capture rig and software.

UCLA Athletics December 2020 – January 2022
Data Analytics and Sports Science Project Lead *Los Angeles, CA*

- Led 20 data consultants to provide data science and engineering support for 19 UCLA NCAA D1 athletic teams.

- Engineered a data pipeline to manage athlete wellness data through Sparta, AWS, and Microsoft Azure.
- Designed PowerBI dashboards on each athlete's daily performance for load management and injury prevention.
- Created the inaugural sports science pipeline to provide full-time analyst roles to committed undergraduates.

National Institutes of Health – Office of AIDS Research June 2021 – August 2021
Data Science Fellow *Virtual / Bethesda, MD*

- Developed an unsupervised classification algorithm through Doc2Vec to analyze and assign topical labels for submitted grant proposals to aid in reviewer selection, accurately replicating 80% of human-reviewed labels.
- Cleaned and compiled HIV/AIDS grant proposal data from a 13-year period to format into an unified database.
- Conducted and visualized network analysis on PI and institution collaboration across HIV/AIDS research.

HONORS AND AWARDS

Third Place, Education Track – QWER Hacks 2021
Beckman Legacy Awardee ($8,000) – Beckman Foundation 2020

SKILLS

Languages: English (native), Mandarin (beginner)
Programming Languages: Python, C, C++, C#, SQL, MATLAB, R, JavaScript, HTML, CSS,
Mixed Reality and Modeling: Unity, Oculus Quest v1/v2, MuJoCo, Blender
Data Science: NumPy, Pandas, Matplotlib, Seaborn, Tableau, PowerBI
Machine Learning: SkLearn, PyTorch, Tensorflow, NLTK

SELECTED OUTREACH

Sports Analytics Outreach Head, UCLA DataRes 2021 – 2022
Application Reviewer, Coding it Forward 2021 – 2022
Curriculum Developer and Python Instructor, ACM Teach LA 2020 – 2021