Feiyang Huang

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EDUCATION

Weill Cornell Graduate School of Medical Sciences — New York, NY
Tri-Institutional PhD Program in Computational Biology and Medicine — August 2023 – Expected 2028

Relevant Coursework: Foundations of Data Science, Data Structures & Algorithms

Johns Hopkins University — Baltimore, Maryland
B.S. in **Computer Science** and **Biomedical Engineering**; GPA 3.96 — September 2020 – May 2023

Relevant Coursework: Machine Learning, Computational Genomics and Sequences, Computer Vision, Parallel Computing, Biomedical Data Science, Biological Models & Simulations, Statistical Physics, Systems & Controls, Nonlinear Dynamics, Optimization, Algorithm, Data Structures.

RESEARCH EXPERIENCE

Sloan Kettering Institute, Computational & Systems Biology Program
Rotation Student, Aug 2023 – Nov 2023
Advisor: Dr Quaid Morris
Developing large language models for tumour mutations.

Johns Hopkins University, Center for Computational Biology
Student Researcher, Jan 2021 – Present
Advisor: Professor Jean Fan
Developed an analysis pipeline to de-convolve spatial transcriptomics data using the Latent Dirichlet Allocation model in R. Developed runtime and memory usage benchmarks and characterized performance across 100+ experiments. Authored tutorials demonstrating spatial transcriptomics analysis workflows employing PCA and t-SNE. Coauthored a publication in Nature Communications.

Developed an algorithm to quantify cellular mRNA polarization in R using a torque model. Developed a simulation framework to generate gene spots using multivariate Gaussian distribution. Submitted for the Provost Undergraduate Research Award.

Johns Hopkins University, Institute for NanoBioTechnology
Research Intern, May 2021 - Aug 2021
Advisor: Professor Tza-Huei (Jeff) Wang, Alexander Y Trick PhD.
Designed, conducted, and documented 30+ optimization experiments, improving PCR assay detection limit by 15%. Enhanced functionalities of pre-existing embedded Python real-time image analysis pipeline and Arduino motor control code by refactoring functions and optimizing analysis pipeline parameters. Designed test rigs in CAD and manufactured components using SLA and FDM 3D printing to validate mechanical components of the PCR instrument. Developed regulatory-compliant point-of-care PCR cartridges in collaboration with consultants and manufacturers.

National University of Singapore, Department of Physiology
Research Intern, Nov 2019 - Dec 2020
Advisor: Professor Hanry Yu
Developed a convolutional neural network for endoscopic image classification and attained 91.1% accuracy. Collaborated with graduate students to assemble and manage a database of over 6000 patient records. Coauthored a publication in Gastrointestinal Endoscopy.

Developed an in-vitro cell model comprising differentiated stem cells and quantified its drug responses using ELISA assays. Performed numerous stem cell cultures, including hepatocyte and Kupffer cell differentiation and embryonic body generation. Improved existing protocol for in-vitro drug response models using a co-culture of hepatocyte and THP-1 macrophage.

PUBLICATIONS

1. Lim, L. J., Wong, S. Y. S., **Huang, F**., Lim, S., Chong, S. S., Ooi, L. L., Kon, O. L., & Lee, C. G. (2019). Roles and Regulation of Long Noncoding RNAs in Hepatocellular Carcinoma. Cancer research, 79(20), 5131–5139. https://doi.org/10.1158/0008-5472.CAN-19-0255
2. Luo, X., Wang, J., Han, Z., Yu, Y., Chen, Z., **Huang, F**., Xu, Y., Cai, J., Zhang, Q., Qiao, W., Ng, I. C., Tan, R. T., Liu, S., & Yu, H. (2021). Artificial intelligence-enhanced white-light colonoscopy with attention guidance predicts colorectal cancer invasion depth. Gastrointestinal endoscopy, 94(3), 627–638.e1. https://doi.org/10.1016/j.gie.2021.03.936
3. Miller, B. F., **Huang, F**., Atta, L., Sahoo, A., & Fan, J. (2022). Reference-free cell type deconvolution of multi-cellular pixel-resolution spatially resolved transcriptomics data. Nature communications, 13(1), 2339. https://doi.org/10.1038/s41467-022-30033-z

PRESENTATIONS

1. Johns Hopkins University BME Design Day, Baltimore, MD, May 2022. Parent C, Ruci A, **Huang F**, Simon E, Zhang E, Krishnan A, Eng R, Hayat A. "DioTeX: Hemorrhage Diagnostics" (poster)
2. Military Health System Research Symposium, Kissimmee, FL, September 2022. Parent C, Ruci A, **Huang F**, Simon E, Zhang E, Krishnan A, Eng R, Hayat A, Furer A, Durr NJ. "Towards point-of-care internal hemorrhage detection through a syndecan-1 lateral flow assay" (oral presentation).

PROFESSIONAL EXPERIENCE

DioTeX Diagnostics LLC
Co-Founder, Nov 2020 - Present
Co-led a team to innovate a novel point-of-care diagnostic for internal hemorrhage by leveraging a lateral flow assay. Led assay development by training 8 team members. Designed and documented experimental protocols and guided other team members with experiment execution and data interpretation. Pitched business plans to VentureWell, Johns Hopkins University, etc. and raised over $60,000 in non-dilutive funds. Co-authored grant applications including to the DoD and NSF-SBIR; Co-authored IRB animal study for a porcine hemorrhage model.

Johns Hopkins University, Biomedical Design Team
Team Leader, Aug 2022 - Present
Organized collaboration with clinicians to create an algorithm to continuously monitor sedation state of pediatric ICU patients. Contacted and interviewed over 20 clinical stakeholders at Johns Hopkins, Boston Children's Hospital, and Stanford. Managed a team of 7 undergraduates, guided literature review, led all-hands meetings and maintained project board. Oversaw the timely delivery of an opportunity brief, 2 design history files, and 4 faculty review meetings. Oversaw the submission of an IRB data study on the link between ICU vitals and observational sedation score.

Hologic Inc
Software Engineer Intern, May 2022 - Aug 2022
Developed an internal work history search tool and dashboard for software engineers using C# in WPF framework. Automated monthly release note generation and reduced time spent on task by 9x from 3 hours to 20 minutes. Conducted needs discovery interviews and refined software requirement specifications to improve adoption by 50%. Studied the feasibility of using depth cameras and Intel RealSense SDK to reconstruct the surface of breast phantoms (self-initiated project).

LEADERSHIP/SERVICE

Singapore Students' Association, Johns Hopkins University
President, June 2021 – Present
Organize cultural events for university student body. Organize events to unite Singaporean students at Johns Hopkins and encourage bonding. Maintain online communications platforms and develop networks for mutual assistance and support.

Theta Tau Professional Fraternity
Member, Aug 2020 – Sep 2022
Organize professional development events including internship panels, course registration guidance, and coffee chats.

Singapore Armed Forces
3rd Sergeant, Aug 2020 – Sep 2022
Led a detachment of 3 soldiers to fulfill mission objectives in a timely and safe manner. Co-supervised 15 soldiers in daily training routines. Addressed the welfare concerns of individual soldiers and facilitated communications with higher command

TEACHING

Couse Assistant – EN.601.230 Mathematical Foundations for Computer Science, Fall 2022.