Hui Jia Farm

github.com/FarmHJ hui.farm@gtc.ox.ac.uk or huijiafarm@gmail.com

Research Interest

Cardiac electrophysiology, Computational biology

Academic Qualifications

Doctor of Philosophy, Computer Science Oct 2020 –
University of Oxford, United Kingdom
Title: Computational Modelling of Ion Channel Kinetics under Drug Intervention on Cardiac Myocytes
Supervisors: Prof. David J. Gavaghan, Dr. Michael Clerx, Dr. Fergus Cooper, Dr. Chon Lok Lei, Dr. Ken Wang, Dr. Liudmila Polonchuk

Bachelor of Science (Mathematical Sciences), Honours Aug 2014 – Jun 2018
Nanyang Technological University, Singapore
Specialisation: Applied Mathematics
Thesis: Stochastic Gradient Algorithm for Gaussian Graphical Models with Hidden Variables
Supervisors: Assoc. Prof. Xiang Liming, Assoc. Prof. Justin Dauwels

Honours and Awards

A*STAR National Science Scholarship (PhD) 2018 –
ASEAN Undergraduate Scholarship 2014 – 2018

Research Experience

Research Officer Sep 2018 – Aug 2020
*Bioinformatics Institute, Agency for Science Technology and Research (A*STAR), Singapore*
- Implemented image processing techniques and developed various mathematical models to study biological phenomena, such as cell stretching and merozoite cell division.

Research Assistant Jul 2018 – Aug 2018
Earth Observatory of Singapore, Nanyang Technological University, Singapore
- Solved inverse problems, with data uncertainties, non-uniqueness and theoretical uncertainties, to determine source of earthquakes from several signal stations.

Final Year Project Student Aug 2017 – May 2018
School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore
- Developed stochastic gradient algorithm to learn the structure of Gaussian graphical models with hidden variables at lower computational complexity by implementing sampling and projection method for estimation of gradient.

Research Intern May 2017 – Jul 2017
*Bioinformatics Institute, Agency for Science Technology and Research (A*STAR), Singapore*
- Improved accuracy of Traction Force Microscopy algorithm, for cell biophysics, by 20% for low noise level data, with L1 and L2 regularization.

Teaching Experience

Marker Oct 2021 – Dec 2021
Department of Computer Science, University of Oxford, United Kingdom
Course: Bayesian Statistical Probabilistic Programming

Demonstrator Oct 2021 – Oct 2021
Doctoral Training Centre, University of Oxford, United Kingdom
Course: Software Engineering & Sustainable Research

Tutor Aug 2017 – Nov 2017
School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore
Course: Linear Algebra 1

Other Activities

Bioinference 2022 Conference Organising Committee Oct 2021 – May 2022
Funded by the London Mathematical Society, the Heilbronn Institute for Mathematical Research and the Department of Computer Science, University of Oxford
https://bioinference.github.io/2022/

Squash Club May 2021 –
Captain of Green Templeton Squash Club, University of Oxford (2022 – 2023)
President of Green Templeton Squash Club, University of Oxford (2023 – present)

Publications

Farm, H.J., Clerx, M., Cooper, F. et al. (2023) "Importance of modelling hERG binding mechanism in predicting drug-induced action potential prolongations for drug safety assessment." *Front. Pharmacol.* 14. doi:10.3389/fphar.2023/1110555
https://github.com/FarmHJ/importance-of-binding-mechanism

Creswell, R.*, Augustin, D.*, Bouros, I.*, **Farm, H.J.*,** Miao, S.*, Ahern, A.* et al. (2022) "Heterogeneity in the onwards transmission risk between local and imported cases affects practical estimates of the time-dependent reproduction number." *Phil. Trans. R. Soc. A*. 380:20210308. (*shared first authors) doi:10.1098/rsta.2021.0308
https://github.com/SABS-R3-Epidemiology/transmission-heterogeneity-results

van der Vegt, S. A.*, Dai, L.*, Bouros, I.*, **Farm, H.J.*,** Creswell, R.*, Dimdore-Miles, O.*, Cazimoglu, I.* et al. (2022) "Learning transmission dynamics modelling of COVID-19 using comomodels." *Math. Biosci.* 349. (*shared first authors) doi:10.1016/j.mbs.2022.108824
https://github.com/Como-DTC-Collaboration/como-models-math-biosci

Zhou, T., ..., **Farm, H.J.,** Goh, E. L. K., Chiam, K. H. (2023) "ContrastivePose: A contrastive learning approach for self-supervised feature engineering for pose estimation and behavioral classification of interacting animals." *Comput. Biol. Med.* 165:107416. doi:10.1016/j.compbiomed.2023.107416

Chong, L. H., Ching, T., **Farm, H.J.,** et al. (2022) "Integration of a microfluidic multicellular coculture array with machine learning analysis to predict adverse cutaneous drug reactions." *Lab Chip.* 22, 1890-1904. doi:10.1039/D1LC01140E

Conferences

Potential importance of modelling hERG kinetics in predicting drug-induced action potential and QTc change: exploration through a simulation study informed by experimental data
12 Sep 2022
Rapid Fire Poster Presentation at Safety Pharmacology Society (SPS) Annual Meeting 2022, Montreal, Canada

Predicted drug effects on the action potential vary significantly with different models
14 Feb 2022
Poster Presentation at Biophysical Society (BPS) Annual Meeting 2024, Philadelphia, Pennsylvania, U.S.

Last Updated on 26 Jan 2024