

# Mingxuan Liu

Center of Computational Quantitative Medicine  
Duke-NUS Medical School

mingxuan.liu@u.duke.nus.edu  
+65 82442078

## EDUCATION

### Duke-NUS Medical School

2022-Present

PhD in Biostatistics & Health Data Science, *Advisor: Nan Liu*  
Exchange: Harvard Medical School, *Advisor: William La Cava*

Mar 2024-Jul 2024

### National University of Singapore

2020-2021

MS in Statistics (4.85/5, top 10%)

### Nanjing Univerisity

2016-2020

BSc in Mathematics, *Advisor: Libong Wang*  
Exchange: University of Queensland

Aug 2016 - Dec 2016

## RESEARCH AREAS

AI fairness in healthcare, interpretable machine learning, missing value imputation

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## PUBLICATIONS

- 2024     **Liu, M.**, Ning, Y., Ke, Y., Shang, Y., Chakraborty, B., Ong, M.E.H., Vaughan, R. and Liu, N.  
Fairness-Aware Interpretable Modeling (FAIM) for Trustworthy Machine Learning in  
Healthcare Under review. Preprint available at: doi:arxiv.org/abs/2403.05235
- 2023     **Liu, M.\***, Ning, Y.\*, Teixayavong, S., Mertens, M., Xu, J., Ting, D. S. W., ... and Liu, N.  
Towards clinical AI fairness: A translational perspective. *Npj digital medicine*  
doi:10.1038/s41746-023-00918-4
- 2023     Xie, F., Ning, Y., **Liu, M.**, Li, S., Saffari, S. E., Yuan, H., Volovici, V., Ting, D. S. W.,  
Goldstein, B. A., Ong, M. E. H., Vaughan, R., Chakraborty, B., and Liu, N.  
A universal AutoScore framework to develop interpretable scoring systems for predicting  
common types of clinical outcomes. *STAR protocols* doi:10.1016/j.xpro.2023.102302
- 2023     **Liu, M.\***, Li, S.\*, Yuan, H., Ong, M.E.H., Ning, Y., Xie, F., Saffari, S.E., Shang, Y., Volovici, V.,  
Chakraborty, B. and Liu, N.  
Handling missing values in healthcare data: A systematic review of deep learning-based  
imputation techniques. *Artificial Intelligence in Medicine*.  
doi:10.1016/j.artmed.2023.102587
- 2022     Liu, N., **Liu, M.**, Chen, X., Ning, Y., Lee, J. W., Siddiqui, F. J., Saffari, S. E., Ho, A. F. W.,  
Shin, S. D., Ma, M. H., Tanaka, H., Ong, M. E. H., and PAROS Clinical Research Network  
Investigators.

Development and validation of an interpretable prehospital return of spontaneous circulation (P-ROSC) score for patients with out-of-hospital cardiac arrest using machine learning: A retrospective study. *EClinicalMedicine*. doi:10.1016/j.eclinm.2022.101422

## CONFERENCE ABSTRACTS (PEER-REVIEWED)

- 2024 **Liu, M.**, Ning, Y., Ke, Y., Shang, Y., Chakraborty, B., Ong, M.E.H., Vaughan, R. and Liu, N. Fairness-Aware Interpretable Modeling (FAIM) for Trustworthy Machine Learning in Healthcare. In *Symposium on Artificial Intelligence in Learning Health Systems (SAIL)*. [Poster]
- 2024 **Liu, M.**, Ning, Y., Ke, Y., Shang, Y., Chakraborty, B., Ong, M.E.H., Vaughan, R. and Liu, N. Fairness-Aware Interpretable Modeling (FAIM) for Trustworthy Machine Learning in Healthcare. In *AMIA Informatics Summit*. [Poster]
- 2023 **Liu, M.**, Ning, Y., Yau, C.E., Okada, Y., Li, S., Ho, A.F.W., Shin, S.D., Ma, M.H.M., Tanaka, H., Ong, M.E.H., and Liu, N. Federated transfer learning for prediction of 30-day survival for out-of-hospital cardiac arrest patients. In *EMS Asia*. [Oral]

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## AWARDS AND HONORS

- Khoo Pre-Doctoral Fellowship, Duke-NUS Medical School, 2022-2026
- Travel Support Award, Symposium on Artificial Intelligence in Learning Health Systems (SAIL)
- Undergraduate Research Exchange Awards, Nanjing University, 2019
- The second prize of the Contemporary Undergraduate Mathematical Contest in Modelling, 2018
- Merit Student (Top 10% Students), Nanjing University, 2017

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## PROFESSIONAL EXPERIENCE

### Research Assistant Intern

A\*star – Agency for Science, Technology and Research (supervised by Dr. Chin Su), 2021

- Conducted machine learning models (e.g., Random Forest and XGboost) via R and python to predict protein production based on frequency of amino acids, improving the general performance by 12% and writing pipelines to make the procedure efficient.

## **Data Science Intern**

Benshi.ai, 2020-2021

- Analyzed in project about maternal health and dealt with big datasets via Python and Spark through Azure cloud platform, providing efficient data analysis pipeline for modelling.
- Applied survival models via Pysurvival module to predict users' active time for Safe Delivery App and explored users' profiles, generating data insights with team members.
- Managed corporation cross teams with development of Machine Learning models and promote friendly cooperation with Denmark company Maternity Foundation.

## **CERTIFICATES**

- Deep Learning Specialization (5 courses) from Deeplearning.ai and Coursera
- Big Data Fundamentals with Pyspark from DataCamp
- Finding Hidden Messages in DNA (with Honors) from the University of San Diego and Coursera
- Design and Interpretation of Clinical Trials from Johns Hopkins University and Coursera
- Introduction to Healthcare from Stanford University and Coursera

Updated March 2024