

# MingYu Lu

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Github: <https://github.com/q8888620002>

## Education

### University of Washington

Seattle, WA

Ph.D. in Computer Science, Advisor: Su-In Lee

Sept 2021 - Aug 2026 (expected)

- Courses include Deep Learning Theory, Interactive Learning, Randomized Algorithm, and Computational Biology

### Harvard Medical School

Boston, MA

M.S. in Biomedical Informatics.

May 2019

- Thesis *Sensitivity Analysis of Deep Q-Learning for Sepsis Treatment*.

- Courses include Computational Statistics, Biostatistics, Machine Learning, and Data Science in Medicine.

### Kaohsiung Medical University

Kaohsiung, Taiwan

Doctor of Medicine.

June 2017

- Studies included biochemistry, genetics, pharmacology, pathology, anatomy, physiology and microbiology.

## Honors

### LEAP\* Fellowship of the Ministry of Science and Technology of Taiwan 2019

## Research

### AIMS Lab, University of Washington

Seattle, WA

## Experience

### Research Assistant

Sept 2021 - Present

- Developing advanced machine learning methods at the intersection of explainable AI, feature and data attribution, generative models, and treatment effect estimation. These methods are applied within the biomedical domain to improve understanding and support decision-making in complex real-world healthcare settings.

### MIT Laboratory for Computational Physiology

Cambridge, MA

### Summer Visiting Scholar

2023

- Develop contrastive learning methods for time series prediction for in-hospital pediatric infection.

### Philips Research North America

Cambridge, MA

### Clinical Data Scientist

2020 - 2021

- Develop scalable and efficient algorithms for clinical decision support and treatment outcome prediction. Analyzed electronic medical record and hospital workflow.

### MIT Laboratory for Computational Physiology

Cambridge, MA

### Postdoctoral/Graduate Research

2018 - 2020

- Developed machine learning model and evaluation metrics on dynamical treatment regimes, causal inference, counterfactual simulation models, and reinforcement learning in clinical decision making.

### Academia Sinica, Institution of Information Science

Taipei, Taiwan

### Research Assistant (Aug 2017 - Feb 2018)

- Improved efficiency of protein spectrum viewer by refactoring data structure and deploying visitor pattern of fragmented spectrum. Designed and implemented user interface of the spectrum viewer.

## Work

## Experience

**Clinical Data Scientist** Philips Research North America (2020 - 2021)

**Postdoc Researcher** MIT (2019- 2020)

**Medical Intern** National Taiwan University Hospital (2016 - 2017)

- Core clinical rotation in major specialties, primary care duty, surgical assistance. Analyzed laboratory results, and gathered information during examination to properly diagnose illness.

**CoFounder & Web Developer** TinyNote <https://thetinynotes.com/> (2016 - 2019)

A website of physician-authored clinical decision support resources, allowing medical professionals to follow the more than 1500+ latest guidelines of diseases and clinical inquiry with monthly 180,000+ active users.

- Responsible for AWS deployment, development and maintenance of back-end APIs, database, text-searching package of NodeBB, and Google search engine optimization.

## Publications

**Mingyu Lu**, Chris Lin, Su-In Lee “Efficient Shapley Values for Attributing Global Properties of Diffusion Models to Data Group” *ICLR 2025*

**Mingyu Lu**, Chris Lin, Su-In Lee “Efficient Global Data Attribution for Diffusion Model” *ICLR2024 workshop on Navigating and Addressing Data Problems for Foundation Models*

**Mingyu Lu**, Ian Covert, Nathan White, Su-In Lee “Deciphering Treatment Effect through Explaining Ensemble CATEs” *arXiv 2024 Under Review Nature Medicine*

Ian Covert, Wei Qiu, **Mingyu Lu**, Nayoon Kim, Nathan White, Su-In Lee “Greedy Information Maximization for Online Feature Selection” *ICML 2023*

- LEAP is a governmental talent program that matches top-notch Taiwanese professionals to research opportunities in the leading research institute in U.S., France and Israel. Exclusively for applicants with an M.D. degree or Ph.D. degree and significant academic achievement.

Elias Baedorf Kassis, Stephanie Hu, **MingYu Lu**, Alistair Johnson, Somnath Bose, Maximilian S Schaefer, Daniel Talmor, H Lehman Li-wei, Zach Shahn “Titration of Ventilator Settings to Target Driving Pressure and Mechanical Power” *Respiratory Care* 2022

Yale Chang, Corneliu Antonescu, Shreyas Ravindranath, Junzi Dong, **Mingyu Lu**, Francesco Vicario, Lisa Wondrely, Pam Thompson, Dennis Swearingen, and Deepak Acharya “Early Prediction of Cardiogenic Shock Using Machine Learning” *Front. Cardiovasc. Med. - Heart Failure and Transplantation* 2022

**Mingyu Lu**, Yifang Chen, Su-In Lee. “A Deep Bayesian Bandits Approach for Anticancer Drug Screening : Exploration via Functional Prior” *Adaptive Experimental Design and Active Learning in the Real World at ICML 2022*

Rui Li, Stephaine Hu, **MingYu Lu**, ,Yuria Utsumi, Prithwish Chakraborty, Daby M. Sow, Piyush Madan, Jun Li, Mohamed Ghalwash, Zach Shahn, and Li-wei H. Lehman. “G-Net: a Recurrent Network Approach to G-Computation for Counterfactual Prediction Under a Dynamic Treatment Regime” *Machine Learning for Health (ML4H) at NeurIPS 2021*

**MingYu Lu**, Zach Shah, Finale Doshi Velez, and Li-Wei H Lehman: “Is Deep Reinforcement Learning Ready for Practical Applications in Healthcare? A Sensitivity Analysis of Duel-DDQN for Hemodynamic Management in Sepsis Patients Reinforcement Learning for Sepsis Treatment. “ *AMIA 2020. (Distinguished Paper, 5 out of 1,350)*

Niklas Rindtorff, **MingYu Lu**, Nisarg Patel, Huahua Zheng, and Alexander D’Amour: “A Biologically Plausible Benchmark for Contextual Bandit Algorithms in Precision Oncology Using in vitro Data” *Machine Learning for Health (ML4H) Workshop at NeurIPS 2019.*

#### Abstracts/Posters

Rui Li, Yuria Utsumi, Sanjoy Dey, **Mingyu Lu**, Prithwish Chakraborty, ShubroDas, Mohamed Ghalwash, Zach Shahn, Daby M. Sow, Li-wei H Lehman, and Roger Mark. “Learning Optimal Dynamic Treatment Regimes (DTRs) from Temporal ICU Monitoring Data” *MIT-IBM Watson AI Lab Virtual Poster Session 2020*

**MingYu Lu**, Chenyu Lu, Jingyi Chen, and Leo Anthony Celi “Predicting Hemodilution with Machine Learning” *Beth Israel Deaconess Medical Center Artificial Intelligence/Machine Learning Symposium 2022*

**MingYu Lu** “Response to COVID-19 Artificial Intelligence Diagnosis using only Cough Recordings” *Science Medica Taiwan*

#### Teaching

##### **The University of Washington**

Teaching Assistant CSE 543 Machine Learning 2023, 2024

Teaching Assistant CSE 599F Explainable Machine Learning 2023

Teaching Assistant CSE 527 Computational Biology 2022

##### **Harvard-MIT**

Teaching Assistant HST953 Collaborative Data Science in Medicine 2019

#### Service

##### **Organizer**

*NewInML at NeurIPS 2020*

##### **Program committee**

*ICLR Navigating and Addressing Data Problems for Foundation Models (DPFM) Workshop 2025*

##### **Reviewer**

*NeurIPS Machine Learning for Health (ML4H) Workshop 2019, 2020*

*ACM Conference on Health, Inference, and Learning 2020*

*AMIA 2020*

##### **Mentorship**

Society of Critical Care Medicine Datathon, Milan Critical Care Datathon 2020

Beth Israel Deaconess Medical Center Artificial Intelligence/Machine Learning Datathon 2020

##### **University and Department Service**

Chief Information Officer, KMU Class of 2017

President of Guitar Club Leader, Kaohsiung Medical University (2013 - 2014)

#### Skills

**Programming/Scripting Languages:** Python, R, JavaScript, Java, php, C#, HTML, CSS.

**Data analysis/Machine learning:** Numpy, Scikit-Learn, Pandas, Tensorflow, Pytorch.

**Database/Query:** Postgre, MySQL, MongoDB, BigQuery.

**Cloud/Web Services/Framework:** AWS, GCP, Nginx, NodeJS, Express.

**Virtual Environment:** Docker, OpenAI Gym/Universe, Anaconda.

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