

JUNYI GAO

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Google Scholar: <https://scholar.google.com/citations?user=5-1DeBsAAAAJ>

EDUCATION

| | |
|---|---------------------|
| University of Edinburgh | Edinburgh, UK |
| Supervisor: Prof. Ewen M. Harrison | |
| PhD student funded by the HDR UK-Turing Wellcome program | Oct 2022 – Present |
| University of Illinois at Urbana-Champaign | Illinois, US |
| Supervisor: Prof. Jimeng Sun | |
| Master in Computer Science (Transferred from the PhD program) | Aug 2020 – May 2022 |
| Beihang University | Beijing, China |
| B.Eng. in Software Engineering (Honored Graduate) | Sep 2015 – Jul 2019 |

PUBLICATIONS

* indicates equal contribution; + indicates corresponding author

- [Cell Patterns] **A Comprehensive Benchmark for COVID-19 Predictive Modeling Using Electronic Health Records in Intensive Care**
Junyi Gao*, Yinghao Zhu*, Wenqing Wang*, Guiying Dong, Wen Tang, Hao Wang, Yasha Wang, Ewen M Harrison, Liantao Ma
Patterns, **IF: 6.5**, 2024
- [Cell Patterns] **Mortality Prediction with Adaptive Feature Importance Recalibration for Peritoneal Dialysis Patients**
Liantao Ma*, Chaohe Zhang*, Junyi Gao*+, Xianfeng Jiao, Zhihao Yu, et al.
Patterns, **IF: 6.5, Cover Paper**, 2023
- [JAMIA] **Multi-Faceted Analysis and Prediction for the Outbreak of Pediatric Respiratory Syncytial Virus**
Chaoqi Yang, Junyi Gao, Lucas Glass, Adam Cross, Jimeng Sun
Journal of the American Medical Informatics Association, **IF: 7.9**, 2023
- [Nature Comm.] **Evidence-Driven Spatio-Temporal COVID-19 Hospitalization Prediction with Ising Dynamics**
Junyi Gao, Joerg Heintz, Christina Mack, Lucas Glass, Adam Cross, Jimeng Sun
Nature Communications, **IF: 17.7**, 2023
- [KDD 2023] **PyHealth: A Deep Learning Toolkit For Healthcare Applications**
Chaoqi Yang*, Zhenbang Wu*, Patrick Jiang, Zhen Lin, Junyi Gao, Benjamin Danek, Jimeng Sun
ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Tutorial Track, 2023
- [Cell iScience] **MedML: Fusing Medical Knowledge and Machine Learning Models for Early Pediatric COVID-19 Hospitalization and Severity Prediction**
Junyi Gao, Chaoqi Yang, George Heintz, Scott Barrows, Elise Albers, Mary Stapel, Sara Warfield, Adam Cross, Jimeng Sun
iScience, **IF: 6.1**, 2022.
- [Nature Sci. Data] **The United States COVID-19 Forecast Hub Dataset**
Estee Y. Cramer, et al. [US COVID-19 Forecast Hub Consortium, including Junyi Gao]
Nature Scientific Data, **IF 8.5**, 2022.
- [WWW 2022] **PopNet: Real-Time Population-Level Disease Prediction with Data Latency**
Junyi Gao, Cao Xiao, Lucas Glass, Jimeng Sun
The World Wide Web Conference (WWW), **Oral**, 2022
- [JAMIA] **STAN: Spatio-Temporal Attention Network for Pandemic Prediction Using Real World Evidence**
Junyi Gao, Rakshith Sharma, Cheng Qian, Lucas M Glass, Jeffrey Spaeder, Justin Romberg,

Jimeng Sun, Cao Xiao
Journal of the American Medical Informatics Association, **IF: 7.9**, 2021

- [WWW 2021] **CovidCare: Transferring Knowledge from Existing EMR to Emerging Epidemic for Interpretable Prognosis**
Liantao Ma, Xinyu Ma, **Junyi Gao**, Chaohe Zhang, Zhihao Yu, Xianfeng Jiao, Wenjie Ruan, Yasha Wang, Wen Tang, Jiangtao Wang
The World Wide Web Conference (WWW), **Oral**, 2021
- [KDD 2020] **COMPOSE: Cross-Modal Pseudo-Siamese Network for Patient Trial Matching**
Junyi Gao, Cao Xiao, Lucas Glass, Jimeng Sun
ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), **Oral**, 2020
- [JAMIA] **Dr. Agent: Clinical Predictive Model via Simulated Second Opinions**
Junyi Gao, Cao Xiao, Lucas Glass, Jimeng Sun
Journal of the American Medical Informatics Association, **IF: 7.9**, 2020
- [WWW 2020] **StageNet: Stage-Aware Neural Networks for Health Risk Prediction**
Junyi Gao, Cao Xiao, Yasha Wang, Lucas Glass, Wen Tang, Jimeng Sun
The World Wide Web Conference (WWW), **Oral**, 2020
- [AAAI 2020] **AdaCare: Explainable Clinical Health Status Representation Learning via Scale-Adaptive Feature Extraction and Recalibration**
Liantao Ma, **Junyi Gao**, Yasha Wang, Chaohe Zhang, Jiangtao Wang, Wenjie Ruan, Wen Tang, Xin Gao, Xinyu Ma
AAAI Conference on Artificial Intelligence (AAAI), **Oral**, 2020
- [AAAI 2020] **ConCare: Personalized Clinical Feature Embedding via Capturing the Healthcare Context**
Liantao Ma, Chaohe Zhang, Yashang Wang, Wenjie Ruan, Jiangtao Wang, Wen Tang, Xinyu Ma, **Junyi Gao**
AAAI Conference on Artificial Intelligence (AAAI), 2020
- [ICDM 2019] **CAMP: Co-Attention Memory Networks for Diagnosis Prediction in Healthcare**
Jingyue Gao, Xiting Wang, Yasha Wang, Zhao Yang, **Junyi Gao**, Jiangtao Wang, Wen Tang, Xing Xie
IEEE International Conference on Data Mining (ICDM), 2019
- [UIC 2019] **MUSEFood: Multi-sensor-based Food Volume Estimation on Smartphones**
Junyi Gao*, Weihao Tan*, Liantao Ma, Yasha Wang and Wen Tang
The 16th IEEE International Conference on Ubiquitous Intelligence and Computing, **Oral**, 2019
- [J. PKU] **Applications of Recurrent Neural Network in Clinical Prognosis Prediction of Peritoneal Dialysis**
Wen Tang, **Junyi Gao**, Xinyu Ma, Chaohe Zhang, Liantao Ma, Yasha Wang
Journal of Peking University (Health Sciences), 2019
- [PCC 2018] **Multi-sensor Integrated Food Volume Measurement Based on Smartphone**
Zhengtong shi, **Junyi Gao**, Liantao Ma, Yasha Wang, Jiangtao Wang, Wen Tang
The 14th Conference on Pervasive Computing of China, **Oral**, 2018

WORKSHOPS & ABSTRACTS

- [HDS 2023] **M3Fair: Mitigating Bias in Healthcare Data through Multi-Level and Multi-Sensitive-Attribute Reweighting Method**
Yinghao Zhu, Jingkun An, Enshen Zhou, Lu An, **Junyi Gao**, Hao Li, HaoranFeng, Bo Hou, Wen Tang, Chengwei Pan, Liantao Ma
Health Data Science Conference 2023 (HDS), 2023
- [AMIA-PA 2023] **A Comprehensive Benchmark For COVID-19 Predictive Modeling Using Electronic Health Records in Intensive Care**
Junyi Gao, Yinghao Zhu, Wenqing Wang, Yasha Wang, Wen Tang, Liantao Ma
AMIA 2023 Informatics Summit (AMIA), Podium Abstract Track, 2023.
- [KDD-UG 2022] **COVID Forecaster: Interactive Visualizations of COVID Forecasts with Deep Learning**
Andrew Wang, **Junyi Gao**, Jimeng Sun

ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Undergraduate Consortium Track, 2022.

[PDS-ICPE 2021] Two Machines are Better Than One: Using Multi-agent Reinforcement Learning to Simulate a Clinical Second Opinion
Cao Xiao, **Junyi Gao**, Lucas Glass, Jimeng Sun, Christina Mack
Pharmacoepidemiology and Drug Safety, Abstracts of the 36th International Conference on Pharmacoepidemiology & Therapeutic Risk Management, 2021

[JCO-ASCO 2020] Patient Trial Matching Using Pseudo-Siamese Network
Cao Xiao, **Junyi Gao**, Lucas Glass, Jimeng Sun
Journal of Clinical Oncology, Abstracts of 2020 American Society of Clinical Oncology Annual Meeting, 2020

WORKING EXPERIENCE

- *Sunlab, UIUC* *Urbana, IL*
Research assistant, advised by Prof. Jimeng Sun Aug 2020 – May 2022
Lead research projects for spatio-temporal healthcare predictions in collaborating with OSF Healthcare and IQVIA; Lead research projects for COVID-19 related predictions with the US National COVID Cohort Collaborative (N3C).
- *Analytics Center of Excellence, IQVIA* *Beijing, China*
Intern machine learning researcher, advised by Dr. Cao Xiao May 2019 – Nov 2023
Lead research projects for clinical phenotyping and clinical trial optimization using US claims data and MIMIC-III Intensive Care Unit data.
- *National Software Engineering Research Centre, Peking University* *Beijing, China*
Research assistant, advised by Prof. Yasha Wang June 2017 – Aug 2020
Participate in research projects for clinical risk prediction and nutrition intake recommendation for chronic kidney disease patients in collaborating with the Peking University Third Hospital.

SELECTED AWARDS AND GRANTS

- OpenAI researcher grant (PI) 2024 - 2025
- Reviewer Award, AMIA 2024
- 3rd prize (Top 3 out of all teams), Predicting High Risk Breast Cancer: a Nightingale OS & AHLI data challenge 2023
- HDRUK-Wellcome PhD Funding (£100,000) 2022
- 3rd prize (Top 3 out of all teams from US universities), Big Ten Augmented Intelligence Bowl 2021
- Honored Graduate of Beihang University 2019
- AAAI 2020 Student Travel Award 2019
- Meritorious Winner (Top 10%), Mathematical Contest in Modeling, COMAP 2018
- Scholarship of Academic Excellence (Top 5%), Beihang University 2018
- Scholarship of Science and Technology Competition (Top 1%), Beihang University 2017 & 2018
- 1st prize (Top 10 out of candidates of all majors), Feng Ru Competition, Beihang University 2016

INVITED TALKS AND MEDIA COVERAGE

- Invited talk for the Pandemic prediction with real-world knowledge-based deep learning models at Peking University and Health Data Science, 2024.04.
- Invited talk for the High Risk Breast Cancer Prediction Challenge at ML4H 2022, 2022.11.
- Invited talk for the COVID-19 hospitalization prediction paper MedML at the N3C Fourm, 2022.10.
- Invited talk on AI Time Seminar in Tsinghua University, 2020.09.
- China national flagship channel CCTV-1 made a special program for our project AdaCare and Dr. Vis, 2020.07.

SERVICES

Conference Program Committee Member & Reviewer

- The International Conference on Machine Learning (ICML) 2024

- The International Conference on Learning Representations (ICLR) 2024
- The Annual Conference on Neural Information Processing Systems (NeurIPS) 2023, 2024
- Machine Learning for Healthcare Conference (ML4H) 2022, 2023, 2024
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD) 2023
- American Medical Informatics Association Annual Symposium (AMIA AS) 2023
- American Medical Informatics Association Informatics Summit (AMIA IS) 2024
- American Medical Informatics Association Clinical Informatics Conference (AMIA CIC) 2024
- SIAM International Conference on Data Mining (SDM) 2024

Journal Reviewer

- Health Data Science (HDS)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Journal of Biomedical and Health Informatics (JBHI)
- IEEE Transactions on Signal and Information Processing over Networks (IEEE SIPN)
- Journal of the American Medical Informatics Association (JAMIA)
- International Journal of Digital Earth (IJDE)

Misc

- Guest editor of spj journal Health Data Science 2024
- Co-organizer of KDD'24 workshop "Artificial Intelligence and Data Science for Healthcare: Bridging Data-Centric AI and People-Centric Healthcare" Aug 2024
- Panel member of The HDR UK-Wellcome Biomedical Vacation Scholarship (BVS) programme recruitment team 2024
- Panel member of The HDRUK PhD program recruitment team 2023
- Teaching assistant - Foundations of software development in health and social care Spring 2024
- Teaching assistant - Program Design Spring 2017
- Teaching assistant - Technical Writing for Graduate Spring 2018 & Autumn 2018

PATENTS

- Yasha Wang, Liantao Ma, Xianfeng Jiao, Jiahui Zhou, **Junyi Gao**, and Chaohe Zhang. Method and device for determining potential important information of patient, CN 202010946290.4, filed Oct 09, 2020.
- Yasha Wang, Weihao Tan, Wen Tang, **Junyi Gao**, and Liantao Ma. Sound wave and image fused food volume measurement method and system in smartphone, CN 202010862933.7, filed Aug 25, 2020.