FENGYUN YU

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Google Scholar | Research Gate | GitHub | LinkedIn

EDUCATION

Heidelberg University — Heidelberg, Germany
Master's degree in Scientific Computing — 2023.4 – Present

- Average grade in transcript: 1.4/1.0 (German scale, 1.0 = highest; 76 LP completed)
- Application area: Economics (Grade: 1.35)
- Relevant coursework: Generative neural network (1.0), Theory of deep learning (1.0), Infinite dimension optimization (1.3), NLP with Transformer (1.3), Mathematical machine learning (1.3)

Tsinghua University — Beijing, China
Bachelor's degree in Industrial Engineering — 2017.7 – 2021.6

- Average grade: 3.67/4.00 (equivalent to 1.3 in German scale as per APS)
- Honor: Evergrande Scholarship (top 5% of the cohort)

RESEARCH EXPERIENCE AND INTEREST

Research Interest:

1. Using geometric deep learning to gain insights from spatial omics data
2. Combination of causal inference and machine learning in medical data, with a focus on identifying causal relationships in observational studies and clinical outcomes.

Additional interests: Empirical health economics studies, numerical optimization.

BIBLIOGRAPHY

Peer-reviewed articles

1. Wang C, **Yu F (Co-first)**, Cao Z, et al. Exploring COPD Patient Clusters and Associations with Health-Related Quality of Life Using A Machine Learning Approach: A Nationwide Cross-Sectional Study[J]. *Engineering*, 2025. https://doi.org/10.1016/j.eng.2025.05.005
2. **Yu F**, Jiao L, Chen Q, Wang Q, De Allegri M, et al. (2024) Preferences regarding COVID-19 vaccination among 12,000 adults in China: A cross-sectional discrete choice experiment. *PLOS Global Public Health* 4(7): e0003387. https://doi.org/10.1371/journal.pgph.0003387
3. **Yu F**, Geldsetzer P, Meierkord A, Yang J, Chen Q, Jiao L, Abou-Arraj NE, Pan A, Wang C, Bärnighausen T, Chen S. Knowledge About COVID-19 Among Adults in China: Cross-sectional Online Survey. J Med Internet Res. 2021 Apr 29;23(4):e26940. doi: 10.2196/26940. Erratum in: *J Med Internet Res*. 2021 May 12;23(5):e30100. PMID: 33844637; PMCID: PMC8086781.
4. Chen S, Kuhn M, Prettner K, **Yu F**, Yang T, Bärnighausen T, Bloom DE, Wang C. The global economic burden of chronic obstructive pulmonary disease for 204 countries and territories in 2020-50: a health-augmented macroeconomic modelling study. *Lancet Glob Health*. 2023 Aug;11(8):e1183-e1193. doi: 10.1016/S2214-109X(23)00217-6.

Additional papers: refer to Google Scholar

MAJOR RESEARCH EXPERIENCE

German Cancer Research Center (DKFZ) (Lab of AI in Oncology) — Heidelberg, Germany
Segger: Fast and accurate cell augmentation of imaging-based spatial transcriptomics data — 2025.3 – Present

Brief overview:

- We applied the **graph neural network techniques** based on a heterogeneous graph representation of individual transcripts and cells to improve transcript assignments.

Heidelberg Universität — Heidelberg, Germany
Deep Generative Models: Generative assignment flows for representing discrete data — 2024.9 – Present

Brief overview:

- We introduce **a novel generative model** for the representation of joint probability distributions of discrete random variables by projecting high-dimensional flow matching

Chinese Academy of Medical Sciences & Peking Union Medical College (CAMS&PUMC) Beijing, China

Exploring COPD patient clusters and associations with health-related quality of life using a machine learning approach: a nationwide cross-sectional study 2023.12 – 2025.3

- Co-first author; accepted by **Engineering**
- Responsible for the clustering analysis and regression of the study; identify the phenotypes of COPD patients with respect to the socio-characteristics and comorbidities using **unsupervised machine learning techniques**.

Preferences and willingness to pay for COVID-19 vaccine among adults in China: a cross-sectional discrete choice experiment 2020.12 – 2024.6

- Co-first author (in the first place); have been accepted by **PLOS Global Public Health**
- Responsible for the quantitative analysis of the vaccine preference; determine how the vaccine preference changes with respect to the socio-characteristics using **supervised machine learning techniques**.

SKILLS AND INTERESTS

- **Technical:** Proficient in R, Python, Stata, Matlab, C/C++
- **Languages:** Fluent in English, intermediate German (B1 level)
- **Soft Skills:** Strong communication, leadership, and interdisciplinary collaboration
- **Interests:** Marathon running, badminton, swimming, fostering discipline and resilience