ENZE XU

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M.S. in Computer Science, Wake Forest University

EDUCATION

College of Arts and Sciences, Wake Forest University, North Carolina, U.S. Aug. 2021 - Present

M.S. in Computer Science (GPA: 4.0/4.0 present)

- **Core Courses in CS:** Theory of Computation, Theory of Algorithms, Operating Systems, Database Management Systems, Computer Security, Nonlinear Optimization, Parallel Programming, etc.

School of Electronics Engineering and Computer Science, Peking University, Beijing, China Sep. 2016 - Jul. 2020

B.S. in Data Science and Big Data Technology

No.2 High School Of East China Normal University, Shanghai, China Sep. 2013 - Sep. 2016

RESEARCH EXPERIENCES

Wake Forest University | Research Assistant Aug. 2021 - Present

Advisor: Minghan Chen (https://chenm.sites.wfu.edu/), assistant professor in the Computer Science Department at Wake Forest University

- Applied Fourier Neural Operator under the framework of Physics-informed neural networks (PINN) to solve the performance bottleneck of complex PDE models (See Publications)
  - Independently designed a PyTorch ML framework to implement the PINN design of the Prey-predator (PP) model, Epidemiology (SIR) model, Turing diffusion pattern model, etc.
- Designed a Graph Encoder (AutoEncoder, CNN, etc.) for stage stratification in the protein adsorption process (See Publications)
- Multimodal Spatiotemporal Stratification Network (DNN-based) for Subtype Identification in Alzheimer's Disease (See Publications)
- Explain the PyTorch framework and hands-on practice to undergraduate lab students
  - GitHub Link: https://github.com/EnzeXu/PyTorch_Demo

System Software Research Laboratory | School of EECS | Peking University | Research Assistant Apr. 2019 - Jul. 2020

Advisor: Gang Huang (http://sei.pku.edu.cn/~huanggang), professor and deputy director of Software Research Institute at School of EECS, Peking University

- Designed and programmed blockchain-based smart contracts to control the use of smart home devices
- Propose an adaptive strategy for cloud platforms to schedule resource requests in real-time and efficiently (See Publications)
- Led a team with five laboratory members to design a Sunshine Interview system based on the blockchain smart contract
- Developed an implementation of the resource search engine based on blockchain smart contracts

Key Lab of High-Confidence Software Technology | Peking University | Research Assistant Aug. 2018 - Apr. 2019

Advisor: Xuanzhe Liu (http://www.liuxuanzhe.com/), associate professor at the School of Electronics Engineering and Computer Science, Peking University

- Designed a batch algorithm to extract page features from APK files based on the Android debug bridge (ADB) tool
- Proposed a machine-learning-based approach to helping developers construct a Quick App from an existing native app (See Publications)
- Learned and Developed code-controlled application programming interfaces (APIs) based on known APK files

PUBLICATIONS

- **Xu, E.**, Sun, Z., Zhao, H., Zhang, J., & Chen, M. Data-driven Fourier neural networks to solve complex PDE models. (**Manuscript**)
- **Xu, E.**, Zhang, J., Li, J., Li, Yang, D., Wu, G., & Chen, M. (2022). Pathology Steered Stratification Network for Subtype Identification in Alzheimer's Disease. 2022 *Bioinformatics Oxford journal* (Bioinformatics) (**Under review**, Sep. 2022)
- Chen, J., **Xu, E.**, Wei, Y., Chen, M., Wei, T., & Zheng, S. (2022). Graph Clustering Analyses of Discontinuous Molecular Dynamics Simulations: Study of Lysozyme Adsorption on a Graphene Surface. *Langmuir*, *38*(35), 10817-10825. DOI: 10.1021/acs.langmuir.2c01331. https://pubs.acs.org/doi/10.1021/acs.langmuir.2c01331

- Zhang, J., **Xu, E.**, & Chen, M. (2022, August). AT [N]-net: multimodal spatiotemporal network for subtype identification in Alzheimer's disease. In *Proceedings of the 13th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics* (pp. 1-1).
  DOI: 10.1145/3535508.3545103. https://dl.acm.org/doi/abs/10.1145/3535508.3545103
- Dong, H., **Xu, E.**, Jing, X., Cai, H., & Huang, G. (2020, November). Adaptive Request Scheduling for Device Cloud. In *2020 IEEE International Conference on Services Computing (SCC)* (pp. 394-403). IEEE.
  DOI: 10.1109/SCC49832.2020.00058. https://ieeexplore.ieee.org/document/9284487/
- Liu, Y., **Xu, E.**, Ma, Y., & Liu, X. (2019, July). A first look at instant service consumption with quick apps on mobile devices. In *2019 IEEE International Conference on Web Services (ICWS)* (pp. 328-335). IEEE.
  DOI: 10.1109/ICWS.2019.00061. https://ieeexplore.ieee.org/document/8818418/

WORK EXPERIENCES

Microsoft Asia-Pacific Research & Development Group | Big Data Team | Developer Intern | Beijing. Jul. 2019 - Oct. 2019

- TypeScript & JavaScript | Designed some functions of user visual state management interface of A365 software products
- JavaScript | Implemented the design requirements of UI controls from designers
- JavaScript | Solved the problem of software function compatibility between different browsers
- TypeScript & HTTP-Get/Post | Contacted the data back-end team and proposed a new in-group HTTP query specification to improve the efficiency

Shanghai Jujun Technology Co., Ltd | Big Data Group | Developer | Shanghai Oct. 2020 – Jun. 2021

- Python, YOLOv5 | Adopt open-source functions to recognize faces in videos
  - Taught colleagues to learn related technologies under the leadership of my supervisor
  - GitHub Link: https://github.com/AaronLegenson/Yolov5_Guide
- Python, OpenCV | Identified complex captcha on certain websites through Python scripts Hive SQL, MySQL & Python | Based on the data interface of user enterprises' database, developed big data indicators to evaluate the companies' business status and credit ranking
- Hive SQL, MySQL & Python | Based on the data interface of user enterprises' database, developed big data indicators to evaluate the companies' business status and credit ranking

ACTIVITIES

Peking University Students' Union | Publicity Department | Secretary Sep. 2016 - Sep. 2017

- Participated in a one-year interview and compilation of the quarterly magazine Inside PKU, the most influential student magazine of Peking University
- Responsible for originality and maintenance of mini-games on the WeChat subscription of the students' union

PATENTS

- Chinese Patent: CN 112702390 A - Networking method and device for blockchain-based smart contract resources
- Chinese Patent: CN 112541019 A - Search method and device for blockchain resources

AWARDS & SCHOLARSHIPS

- Research Assistantship Scholarship, Wake Forest University Aug. 2022
- Research Assistantship Scholarship, Wake Forest University Aug. 2021
- Award of Excellence, The Third China Blockchain Development Competition (Top 5%) Jul. 2019
- First Prize, 2018 China Undergraduate Mathematical Contest in Modeling, Beijing Group (Top 1%) Sep. 2018

SKILLS & INTERESTS

- Programming Languages (experienced): Python, C/C++, SQL, MATLAB, JavaScript, TypeScript, Verilog, etc.
- Applications: PyCharm, VS Code, MySQL, Visual Studio, Hive SQL, Hadoop, etc.
- Proficient in software development in Linux, macOS, and Windows
- GitHub: https://github.com/EnzeXu/, https://github.com/AaronLegenson/
- Interests: Go, Tennis, Table Tennis, Badminton, Snooker