Yuan-Yao (Mike) Lou | Curriculum Vitae

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Education

2021 – 2026 (expected) **Purdue University** — West Lafayette, IN
Ph.D. student in Electrical and Computer Engineering `GPA: 3.7/4.0`
- Advisor: Prof. Mung Chiang and Prof. Kwang Taik Kim
- Coursework: Computer Network Systems, Deep Learning, Artificial Intelligence, Linear Model

2015 – 2017 **National Taiwan University** — Taipei, Taiwan
M.S. in Computer Science `GPA: 3.8/4.0`
- Advisor: Prof. Ai-Chun Pang
- Thesis: Fog-based Virtualization for Low-Latency Wearable Services

2011 – 2015 **National Chiao Tung University** — Hsinchu, Taiwan
B.S. in Computer Science `GPA: 3.8/4.0`

Research Interest

Computer Network | Edge Computing | Distributed Systems | Wireless Communication | Computation Offloading | Microservice | NFV/SDN | Open MEC/RAN | Autonomous Driving | Path Planning | Model Predictive Control | Machine Learning | 5G/6G

Publications

2022 [1] "Sampling-based Local Path Planning in Edge Computing for Autonomous Driving," *(under review)*

[2] "Dynamic Task Orchestration for Multi-Tier Edge Computing in Heterogeneous Networks," *(under review)*

2021 [3] S. B. Weinstein, **Y.-Y. Lou**, and T. R. Hsing, "Intelligent Network Edge with Distributed SDN for the Future 6G Network," in **IEEE COMCAS**, 2021 [Link]

2020 [4] Y.-Y. Shih, A.-C. Pang, and **Y.-Y. Lou**, "Chapter 13 - Development of Wearable Services with Edge Devices," in **Fog and Fogonomics**, Wiley Telecom, 2020 [Link]

2018 [5] Y.-Y. Shih, A.-C. Pang, **Y.-Y. Lou**, C.-C. Chuang, L. Zhao, and Z. Ren, "Modularized Service Provisioning at Fog Networks," in **IEEE VTS APWCS**, 2018

2016 [6] H.-P. Lin, Y.-Y. Shih, A.-C. Pang, and **Y.-Y. Lou**, "A Virtual Local-hub Solution with Function Module Sharing for Wearable Devices," in **ACM MSWiM**, 2016 [Link]

[7] X.-L. Wang, M.-J. Sheng, **Y.-Y. Lou**, Y.-Y. Shih, and M. Chiang, "Internet of Things Session Management Over LTE – Balancing Signal Load, Power, and Delay," in **IEEE Internet of Things Journal**, vol. 3, no. 3, pp. 339-353, June 2016 [Link]

Skills

Languages Python | Java | Javascript | TCL | Shell Script | C/C++ | SQL
Web Django/MongoDB | Flask/Eve | Frappe/MariaDB | Jekyll | Bootstrap | HTML/CSS
Tools PyTorch | TensorFlow | Scikit-learn | Matplotlib | Seaborn | Git | Vim | Notion
Platforms Linux | AWS (EC2/S3/DynamoDB/APIGateway/Lambda) | Google App Engine | Android

Research Experience

2021 – Present **Purdue University – EDGE Lab** West Lafayette, IN
Graduate Research Assistant

- Focused on architectural design of microservice-based edge platform to optimize edge applications and RAN performance
- Investigated path planning in autonomous driving to optimize predictive motion control in heterogeneous edge networks [1]
- Explored multi-tier edge computing and built computation offloading framework upon real testbed in 4G network [2]

2020 – 2021 **Independent Researcher** Remote
Collaborator: Prof. Stephen B. Weinstein and Prof. T. Russell Hsing

- Proposed distributed SDN system coupled with localized edge platforms and storage to support autonomous driving
- Served as speaker in Edge and Fog Computing track on IEEE 7th World Forum on Internet of Things [Link]
- Published an introductory paper on IEEE COMCAS 2021 [3]

2015 – 2017 **Ministry of Science and Technology** Taipei, Taiwan
Graduate Researcher

- Proposed Virtual Local-Hub framework to enable microservice computation offloading for Android devices
- Conducted real experiments by deploying local area network to evaluate E2E latency and power consumption
- Designed telemetry dashboard using Django to monitor system performance and manage service provisioning [Link]
- Reduced execution time of wearable microservices by up to 60% and wearable devices' CPU usage by up to 70%
- Developed latency-sensitive applications on wearable and edge devices (CMUSphinx Open Source Speech Recognition)
- Published conference papers on ACM MSWiM 2016 and IEEE VTS APWCS 2018 and one book chapter in 2020 [4] [5] [6]

2014 – 2015 **Princeton University – EDGE Lab** Princeton, NJ
Research Intern | Mentor: Prof. Mung Chiang and Dr. Ming-Jye Sheng

- Built Markov chain model to formulate 4G LTE IoT session management factors (signal load, power, delay)
- Developed probabilistic model simulation to evaluate adaptive DRX algorithms and visualized numerical results
- Improved power saving of by up to 50% and signal saving by up to 60% for packets within 0.1s delay
- Conducted toolkits based on ATT Lab tools to analyze network packets and profile Android app performance
- Published a journal paper in IEEE Internet of Things Journal (IoT-J) in 2016 [7]

Work Experience

2021 **IoT Eye Inc.** Basking Ridge, NJ / Remote
Full-stack Cloud Developer (Internship)

- Deployed multi-agency management platform on AWS using Frappe framework to support five industry partners
- Developed DevOps toolkit in Python automating product deployment and management to improve scalability
- Automated Flask Eve API testing using Postman and Python to boost product robustness
- Improved free-trial feature of Bootstrap-based official website to speed up product delivery
- Released detailed documentation of developed products and tools and Frappe open-source tutorial on GitHub [Link]

2020 – 2021 **Silicon Motion – Algorithm and Technology R&D** `NASDAQ: SIMO` Milpitas, CA / Taipei, Taiwan
Software Engineer (Supervisor)

- Devised microservice-based platform in on-premise server automating design flows to boost development efficiency
- Acted as primary external contact person to collaborate with international companies for researching new solutions
- Established programming disciplines (Python) and organized training sessions for new employees

2017 – 2020 Software Engineer (Senior)

- Developed in-house design verification tools reviewing timing and power requirement to improve reliability
- Automated library maintenance flow using Python and shell script to save manual effort by up to 80%
- Cooperated with Human Resources as technical campus recruiter to promote on-campus brand awareness
- Promoted twice within 24 months for outstanding performance on software development and solution finding

Teaching Experience

2016 – 2017 **National Taiwan University** Taipei, Taiwan
Teaching Assistant `CSIE 3510 Computer Network` `CSIE 5057 Advanced Computer Network`

- Lectured TCP/IP protocol (802.11, 802.3) and demonstrated network packet monitoring and analysis using WireShark
- Designed IRC chatbot application as project assignment to teach students socket programming
- Enhanced program robustness by peer-testing system and stimulated creativity by flexible score criterion
- Received two times of Outstanding Teaching Assistant awards

Certificates

2021 Modern Application Development with Python on AWS | Coursera / AWS
2020 IEEE Winter School on Fog/Edge Computing | IEEE SA & ComSoc

Honors & Awards

2017 Valedictorian of Graduation Ceremony | Department of Computer Science, National Taiwan University
2016 & 2017 Outstanding Teaching Assistant Awards | National Taiwan University
2014 & 2015 Presidential Awards | National Chiao Tung University
2014 Research Project Funding | Ministry of Science and Technology (Taiwan)