Kaiyuan (Eric) Chen

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RESEARCH INTERESTS

Wireless Networks, Mobile and Ubiquitous Computing, Cloud Computing, Data-intensive Systems

EDUCATION

Bachelor of Science (BS), Computer Science — **UNIVERSITY OF CALIFORNIA, LOS ANGELES** | July 2016 – June 2020

GPA Overall: 3.95 / 4.0; GPA Major: 3.98 / 4.0

RESEARCH EXPERIENCE

Research Assistant: Wireless Networking Group — **UCLA COMPUTER SCIENCE** | Winter 2018 – Present

***Project*: Resilient Wi-Fi Multicast | Advisor: Prof. Songwu Lu**

Spearheaded design and implementation across projects:

- ***(a)*** *high-rate Wi-Fi multicast (Ath9k, Windows, Android, Linux)* **that improves Wi-Fi multicast rate 450 times higher**
- ***(b)*** *resilient Wi-Fi multicast re-transmission mechanism that reduces packet loss by 20 times*
- ***(c)*** *Wi-Fi device information smart feedback mechanism (Android to Access Point) with learning and reasoning capabilities*
- ***(d)*** contributed to Wi-Fi multicast project IETF RFC standard draft [2][8]
- ***(e)*** *LTE cross-layer packet dependency analyzer for MobileInsight*

Ongoing Projects*:** *design and implementation on* ***(a) *eSIM Security* ***(b)*** *IoT Model-Centric Security[4]* ***(c)*** *Mobile Distributive Computing*

REU Summer Research Assistant — **UCLA MATHEMATICS** | Spring 2018 – Summer 2018

***Project*: Classification on Large-scale Lyme Disease Data | Advisor: Prof. Deanna Needell**

Proposed dual neural network model for mining the difference between recovered and unrecovered 10,000 Lyme disease patients; Provided interpretable recommendations for unrecovered patients; implemented data mining and classification methods to identify inherent patterns between recovered and unrecovered patient groups' features [9]

PROFESSIONAL EXPERIENCE

Founding Engineer — **MOBIQ TECHNOLOGIES INC.** | Fall 2018 – Present

***Project*: MobIQ Boosts Deep Learning on Cloud | Supervisor: Dr. Yuanjie Li**

Designed and implemented a video streaming and analytic platform (Android, Linux); reduced LTE latency by 50ms and improved deep learning model accuracy by 10% for processing videos on cloud

***Project*: LTE Target Advertising**

Designed and implemented a target advertisement platform to low-latency high-speed network access to improve 30% advertising revenue for outdoor billboard advertisers; contributed to a provisional patent contribution[1]

***Program*: NSF Innovation Corps Program**

Served as Entrepreneur Lead during interviews for an NSF funded program to bridge prior demos with emerging products and reached more than 100 potential customers in 6-weeks

Project Consultor and Leading Software Developer — **BOTECH LTD** | Winter 2018 – Present

***Project*: Smart City Video Analytics Platform**

Designed and implemented deep learning modules (e.g., multi-object detection; monitor quality, human pose checks) to aid decision making of law enforcers; implemented body camera management system and deployed over 100 workstations

***Project*: Automatic Medical Examination Machine**

Designed and implemented deep learning modules—checked hand completion and eye shading; used by provincial DMVs and schools (100s)

Software Engineer Intern — **SIEMENS LTD** | Summer 2017

***Project*: Industrial Data Anomaly Detection | Supervisor: Dr. Wenchao Wu**

Proposed a dynamic Bayesian model for real-time high dimensional industrial data anomaly detection [7]; deployed various clustering approaches for time-series industrial data; deployed anomaly detection algorithms for a refinery with 3,000 IoT sensors.

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PUBLISHED WORKS

Preprints

[1] **Kaiyuan Chen**, Yuanjie Li, Songwu Lu, Zhaowei Tan, Jinghao Zhao. *Optimizing the wireless-powered outdoor target advertising*. Submitted for U.S. Provisional Utility Patent

[2] Jinghao Zhao, **Kaiyuan Chen**, Zengwen Yuan, and Songwu Lu. *High-performance Intelligent Wi-Fi Multicast For VR/AR Applications*. Preparing for IETF RFC draft, UCLA Computer Science Technical Report 190007. Sept. 2019.

[3] **Kaiyuan Chen**, Zeyu Li, Yizhou Sun, Wei Wang, and Songwu Lu. *GloGCN: Effective Global Propagation For Semi-supervised Node Classification*. Association for the Advancement of Artificial Intelligence (AAAI) 2020. New York, US, Feb. 2020.

[4] Zhaowei Tan, Yunqi Guo, **Kaiyuan Chen**, Zengwen Yuan, and Songwu Lu. Model-Centric IoT Security via Sampling: Secure the Model but not the Data. Technical Report, March 2019

Conference Papers

[5] **Kaiyuan Chen** and Jinghao Zhao. "Skip The Question You Don't Know: An Embedding Space Approach". In: *International Joint Conference on Neural Network (IJCNN)*. Budapest, Hungary, June 2019.

[6] **Kaiyuan Chen**, Jingyue Shen, and Fabien Scalzo. "Skull Stripping Using Confidence Segmentation Convolution Neural Network". In: *International Symposium on Visual Computing (ISVC)*. Las Vegas, US, Nov. 2018.

[7] Wenchao Wu, Yixian Zheng, **Kaiyuan Chen**, Xiangyu Wang, and Nan Cao. "A Visual Analytics Approach for Equipment Condition Monitoring in Smart Factories of Process Industry". In: *IEEE PacificVis Conference (PacificVis)*. Kobe, Japan, Apr. 2018.

Posters and Presentations

[8] Jinghao Zhao, **Kaiyuan Chen**, Zengwen Yuan, and Songwu Lu. Intelligent Wi-Fi Multicast for NDN AR. Information-Centric Networking in Wireless Edge Networks(ICN WEN) Workshop. July 2019

[9] **Kaiyuan Chen**, Rong Huang, Diyi Liu, Catherine Wahlenmayer, Jiewen Wang, and Deanna Needell. *Classification of Large-Scale Lyme Disease Data*. Poster and abstract in *Joint Mathematics Meeting (JMM) by Mathematical Association of America*. Baltimore, Jan. 2019.

Posters and Presentations

[10] **Kaiyuan Chen** and Benqiang Wang. *High-resolution Omnipotent Video Codec*. ZL 2015 2 0197947.6.

HONORS

Dean's List — **UNIVERSITY OF CALIFORNIA, LOS ANGELES** | 2016 – Present

Honor Society membership — **UPSILON PI EPSILON (UPE)** | 2017 – Present

Innovation-Corps Grant $25,000 — **NATIONAL SCIENCE FOUNDATION (NSF)** | 2019

Latin Honor *summa cum laude* track — **UNIVERSITY OF CALIFORNIA, LOS ANGELES** | 2019

Highest Distinction — **INTERNATIONAL EUCLID MATHEMATICS CONTEST** | 2017

OTHER PROJECTS

Sampling with Original Data — **UNIVERSITY OF CALIFORNIA** | Fall 2018

Designed a novel and simple approach using Spatial Transformer architecture to encode an image from original pixels—leveraged positional information and denoising autoencoder (DAE) scheme

Achieved 97% MNIST classification accuracy with 4% sampling rate; of 784 pixels, a selection of 37 pixels encode the MNIST dataset

ClassUCLA — **UNIVERSITY OF CALIFORNIA** | Fall 2017 – Present

Automated UCLA class open seating to notified users in terms of class availability or satisfied requirement (Twilio SMS, MySQL, Google Cloud API)

ClassUCLA active users = 1,000+; user numbers continue to grow

REFERENCES

Prof. Songwu Lu: Professor of Computer Science, slu@ucla.edu — **UNIVERSITY OF CALIFORNIA, LOS ANGELES**

Prof. Quanquan Gu: Associate Professor of Computer Science, qgu@ucla.edu — **UNIVERSITY OF CALIFORNIA, LOS ANGELES**

Prof. Yizhou Sun: Associate Professor of Computer Science, yzsun@ucla.edu — **UNIVERSITY OF CALIFORNIA, LOS ANGELES**