Zeyue Xue

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Education

Huazhong University of Science and Technology (HUST) **Wuhan, China**
Bachelor of Engineering, in Telecommunications Engineering Sep 2017-Jul 2021

- **GPA: 3.90/4.0, ranking: 2/130**
- **Core Courses:** ***Calculus(99/100), Circuit Theory (98/100), Linear Algebra(97/100), Fundamental of Computer Programming (C++)(96/100), Analog Circuit and Digital System(Digital) (94/100), Experiment of Analog Circuit&Digital System (Ⅲ) (Principles of Computer Organization)(97/100), Complex Functions&Integral Transforms(98/100), Data Structure(91/100), Stochastic Process(90/100), Fundamentals of Information Theory(91/100), Probability&Mathematics Statistics(95/100), Operating System (88/100), Database Systems (89/100)***

Publications

[1] **Z. Xue**, P. Zhou, Z. Xu, X. Wang, Y. Xie, X. Ding, S. Wen, " A Resource-Constrained and Privacy-Preserving Edge Computing Enabled Clinical Decision System: A Federated Reinforcement Learning Approach", IEEE Internet of Things Journal, **IF=9.936** (**Accepted, to appear**).

[2] **Z. Xue**, S. Luo, C. Wu, P. Zhou, K. Bian, W. Du, "Transfer Heterogeneous Knowledge Among Peer-to-Peer Teammates: A Model Distillation Approach", (https://arxiv.org/abs/2002.02202).

Research Experiences

Research Assistant | Department of Telecommunications Engineering | HUST **Wuhan, China**
Project: Blockchain Applied to Edge Computing Jan 2019-Mar 2019
Advisors: Prof. Pan Zhou, Associate Professor in Electrical Engineering, HUST, IEEE Senior Member

- Presented an efficient and distributed access control scheme via Blockchain, by which only authorized one can access the cache units in Edge Nodes.
- Designed a system where blockchain is deployed among Edge Nodes to provide access control services.
- Protected the privacy of a single data record stored in Edge Nodes through Differential Privacy.

Research Assistant | Department of Telecommunications Engineering | HUST **Wuhan, China**
Project: Peer-to-Peer Knowledge Transfer Among Multiple Agents Oct 2019- Jan 2020
Advisor: Prof. Pan Zhou, Associate Professor in Electrical Engineering, HUST, IEEE Senior Member
Prof. Chao Wu, Professor in Public Affair, Zhejiang University, IEEE Member

- Proposed a brand new approach to directly transfer value functions among peer-to-peer agents.
- Evaluated our method in multiple simple or complex environments and it showed promising performance on stabilizing and accelerating learning progress with improved team-wide reward.
- Designed efficient target and communication protocol to most exploit heterogeneous knowledge.

Research Assistant | Department of Telecommunications Engineering | HUST **Wuhan, China**
Project: Resource-Constrained Federated Learning June 2020- Oct 2020
Advisor: Prof. Pan Zhou, Associate Professor in Electrical Engineering, HUST, IEEE Senior Member

- Discussed the convergence if some edge nodes crash and analyzed its security by incorporating additively homomorphic encryption.
- Proposed the first method to discuss the convergence of fully-decentralized federated learning in energy-constrained edge computing system using Lyapunov Function.
- Validated this framework with observational historical datasets and show promising results.

Remote Research Assistant | School of Computing | National University of Singapore
Project: Fast Algorithm on Deep Learning Recommendation System Nov.2020-
Advisor: Prof. Yang You, Presidential Young Professor in School of Computing, NUS

- Still Working now.

Awards

- National Scholarship, Ministry of Education of China (**Highest Scholarship for Chinese Undergraduates**)
- Outstanding Undergraduate, HUST (1/130)
- Academic Excellence Award, HUST (1/28)

Selected Projects

Core Member | Research on the Marketing Factors of Infant Milk Powder | HUST Nov 2017-Nov 2017

- Used Matlab and SPSS to perform multiple linear regression and cluster analysis.
- Awarded 2st prize in the competition Selected from about 200 teams.

Team Leader | Design a Gluttonous Snake Game | HUST May 2019-May 2019

- Designed and Programmed a Gluttonous Snake through FPGA and Xilinx C.
- Displayed the game in a VGA device.

Team Leader | Detect Breast Cancer| HUST Nov 2019-Jan 2020

- Detected Breast Cancer with Convolution Neural Network (CNN), Deep Q-Network (DQN), Transfer Learning and Supporting Vector Machine (SVM) with accuracy at 99.12% at most.
- Compared the differences and similarities between DQN and SVM for image recognition.
- Won the first prize in more than 15 teams.

Team Leader | Federated Learning on Raspberry Pi | HUST Sep 2020-Sep 2020

- Implemented Federated Learning on Raspberry Pi.
- Tested with MNIST and show accuracy at 97%.

Leadership & Activities

Team Leader | Social Research on Culture in Hongan | Hongan, Hubei Jul 2019-Jul 2019

- Served as the leader of the research team and drafted the research plan.
- Allocated research work of team members and made flexible adjustments according to the situation.

Skills

Programming: C, C++, Java, MATLAB, Python, Latex, FPGA