Guanchu Wang

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PERSONAL PROFILE

I am a post graduate student from department of Electronics & Communication Engineering (ECE) at University of Science and Technology of China (USTC). My previous researches involved deep reinforcement learning, signal process, anomaly detection, wireless communication and networks.

In 2016.9, I joined USTC ECE, where I was fortunate for having been directed by Prof. Chen Gong and Zhengyuan Xu, and my research topics include signal processing, multiple access communication and media access control. Before this, I finished my undergraduate study in Dalian University of Technology (DUT).

From 2019.7 to 2019.9, I was working as an intern in Magcharging Inc. There I was fortunate to be directed by Prof. Xiaodong Wang from Columbia University and finished a prototype machine of radio frequency wireless charging system. From 2019.10 to 2020.1, I was working as a research assistance in the Machine Intellignece Lab in Westlake university. There I was fortunate to be directed by Prof. Donglin Wang and had a work on deep reinforcement learning submitted to IJCAI-2020.

Starting from fall 2020, I am very fortunate to be one of PhD. students of Prof. Xia Hu in Texas A&M University (TAMU), and my current research involves neural architecture search and anomaly detectoin.

EDUCATION

1. **Texas A&M University (TAMU), Texas, United State.**
   Electrical & Computer Engineering, Starting from Fall 2020.
2. **University of Science and Technology of China (USTC), Anhui, P.R.C.**
   M.S. in Information Science and Technology, 2016.9 - 2019.6.
   Supervisor: Prof. Chen Gong.
   Main courses: statistical learning, algorithms, matrix analysis, coding theory, etc.
   GPA: 3.5/4.3 [Details]
   TOEFL: 99/120 (Listening:25/30 Reading:26/30 Writing:27/30 Speaking:21/30). [Details]
   GRE: 323 + 3.5 (Verbal:153 Quantitative:170 Writing:3.5). [Details]
   Academics: [Google Scholar], [DBLP].
3. **Dalian University of Technology (DUT), Liaoning, P.R.C.**
   B.S. in Information and Communication Engineering, 2012.9 - 2016.6.
   Main courses: mathematical statistics, digital signal processing, information theory, communication theory, advanced mathematics, mathematical modeling, etc. [Details]

WORKING EXPERIENCES

1. **Magcharging Inc., Shenzhen, P.R.C.**, Researcher, 2019.7-2019.9.
   Industrial Mentor: Prof. Xiaodong Wang.
2. **Westlake University, Hangzhou, P.R.C.**, Research assistance, 2019.10-2020.1.
   Advisor: Prof. Donglin Wang.

RESEARCH EXPERIENCES

1. **Machine Intellignece Lab in Westlake University, Hangzhou, P.R.C.**
   Research assistance, 2019.10-2020.1.
   - Deep reinforcement learning. [Details]
   - Skill transfer, DIAYN, SAC, DDPG.
2. **Magcharging Inc., Shenzhen, P.R.C.**, Intern, 2019.7 - 2019.9.
   - Ratio frequency wirless charging: [Details]
   - MIMO, blind adaptive beamforming.
   - USRP implement (Labview), Backscattering communication.
3. **Optical Wireless Communication and Network Center in USTC, Anhui, P.R.C.**
   Postgraduate student, 2016.9 - 2019.6.
   - **Optical network system:** [Details]
   - IEEE 802.11 (transmission protocol, throughput analysis).
   - Multi-station access protocol (partner distribution, throughput analysis & optimization).
   - **Multiple accessed system:** [Details]
   - Hidden Markov Model.
   - Multi-user estimation, signal processing, correcting code.
   - **Weak signal optical communication:** [Details]
   - Digital signal processing algorithms (synchronization, estimation & symbol detection).
   - Error correcting code (convolutional, RS, LDPC code).

PUBLICATIONS & PREPRINTS

1. **Preprints:**
   1) Qiangxing Tian, **Guanchu Wang**, Jinxin Liu, and Donglin Wang, "Independent Skill Transfer for Deep Reinforcement Learning."
   2) Qiangxing Tian, Jinxin Liu, **Guanchu Wang**, and Donglin Wang, "Learning Transitional Skills with Intrinsic Motivation."
   3) **Guanchu Wang**, Chen Gong, Zhimeng Jiang, and Zhengyuan Xu, "A Double-station Access Protocol for Optical Wireless Scattering Communication Networks." [ArXiv]
   4) Zhimeng Jiang, Chen Gong, **Guanchu Wang**, and Zhengyuan Xu, "On the Achievable Rate of a Sample-based Practical Photon-counting Receiver." [ArXiv]
2. **Journal Publications:**
   1) **Guanchu Wang**, Chen Gong, Zhimeng Jiang, and Zhengyuan Xu, "Multi-layer Superimposed Transmission for Optical Wireless Scattering Communication." IEEE Photonics Journal, vol. 11, no. 5, Oct. 2019. [PDF]
   2) **Guanchu Wang**, Chen Gong, and Zhengyuan Xu, "Signal Characterization for Multiple Access Non-line of Sight Scattering Communication." IEEE Transaction on Communication, vol. 66, no. 9, pp. 4138-4154, Apr. 2018.[PDF]
   3) **Guanchu Wang**, Kun Wang, Chen Gong, Difan Zou, Zhimeng Jiang, and Zhengyuan Xu, "A 1Mbps Real-time NLOS UV Scattering Communication System with Receiver Diversity over 1km." IEEE Photonics Journal, vol. 10, no. 2, Apr. 2018.[PDF]
3. **Conference Publications:**
   1) Zhimeng Jiang, Chen Gong, **Guanchu Wang**, and Zhengyuan Xu, "Achievable Rate Bounds on Poisson Channel with a Sample-based Practical Photon-counting Receiver." IEEE International Conference on Communications(ICC), Shanghai, China, May 20-24, 2019. [PDF]
   2) **Guanchu Wang**, Chen Gong, Zhimeng Jiang, Zhengyuan Xu, "Characterization on Asynchronous Multiple Access in Non-line of Sight Scattering Communication." IEEE International Conference on Communications (ICC), Kansas City, MO, USA, May 20-24, 2018.[PDF]
   3) **Guanchu Wang**, Chen Gong, and Zhengyuan Xu, "Signal detection and achievable rates for multiple access optical wireless scattering communication." IEEE Global Communications Conference(Globecom), Singapore, Dec. 4-8, 2017.[PDF]

HONORS & AWARDS

1. **Major Awards**, USTC, 2016, 2017, 2018.
2. **Outstanding Graduate,** Dalian, 2016.
3. **Outstanding Bachelor Thesis,** DUT, 2016.
4. **National Second Prize,** China National Mathematical Modeling Contest, 2016.
5. **Honorable Mention,** Mathematical Contest in Modeling (MCM), 2016.
6. **Scholarship of Academic and Innovation**, DUT, 2013, 2014, 2015.
7. **Scholarship of Sumitomo Corporation**, DUT, 2013.

ACADEMIC SERVICES

1. Journal/Conference Reviewer: IEEE Trans. Commun., IEEE Trans. Ind. Electron., IEEE/OSA J. Lightwave Technol., IEEE Commun. Lett.; ICC Workshop.
2. Visiting student, Institute of electronics, Chinese Academy of science, Beijing China, Aug. 2015.
3. Participant, International conference on Optical Wireless Communication, Beijing China, July 2017.
4. Poster, IEEE Global Communication Conference, Singapore, Dec 2017.
5. Presentation, IEEE International Conference on Communications, Kansas USA, May 2018.
6. Participant, ShanghaiTech Workshop on Information, Learning and Decision, June 2018.

KEY SKILLS

1. Python (Pytorch), C++/C, Verilog, Matlab.
2. Optimization, system simulation, deep learning, anomaly detection.
3. Labview/USRP, Verilog/ISE/FPGA.
4. Cooperation and teamwork.