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 accepted by 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.
   Supervisor: Prof. Xia Hu.
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, Jinxin Liu, **Guanchu Wang**, and Donglin Wang, "Learning Transitional Skills with Intrinsic Motivation."
   2) **Guanchu Wang**, Chen Gong, Zhimeng Jiang, and Zhengyuan Xu, "A Double-station Access Protocol for Optical Wireless Scattering Communication Networks." [ArXiv]
   3) Zhimeng Jiang, Chen Gong, **Guanchu Wang**, and Zhengyuan Xu, "On the Achievable Rate of a Sample-based Practical Photon-counting Receiver." [ArXiv]

2. **Conference Publications:**

   1) Qiangxing Tian, **Guanchu Wang**, Jinxin Liu, and Donglin Wang, "Independent Skill Transfer for Deep Reinforcement Learning." International Joint Conference on Artificial Intelligence & Pacific Rim International Conference on Artificial Intelligence(IJCAI-PRICAI), 2020. [PDF] [Github]
   2) 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), 2019. [PDF]
   3) **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), 2018.[PDF]
   4) **Guanchu Wang**, Chen Gong, and Zhengyuan Xu, "Signal detection and achievable rates for multiple access optical wireless scattering communication." IEEE Global Communications Conference(Globecom), 2017.[PDF]

3. **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]

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., Wirel. Commun., J. Lightwave Technol., Commun. Lett.; ICC Workshop.
2. **Poster:** IJCAI-PRICAI 2020 (upcoming online poster); IEEE Globecom 2017; IEEE ICC 2018.
3. **Participant:** ShanghaiTech Workshop on Information, Learning and Decision, June 2018; International conference on Optical Wireless Communication, Beijing China, July 2017.
4. **Visiting:** Institute of electronics, Chinese Academy of science, Beijing China, Aug. 2015.

KEY SKILLS

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