Yang Zhao

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🎓 Education

Imperial College London, London UK   2018 – Present
MSc Communication and Signal Processing, expected distinction

University of Liverpool, Liverpool UK   2016 – 2018
BEng Communication and Electronics, with distinction

👥 Experience

China Mobile Group, Guangdong CN   2018
Summer Intern
- Scheduled the emergency communication system
- Implemented MRO coverage analysis

China Mobile Group Design Institute, Guangdong CN   2017
Summer Intern
- Summarized business solutions of NB-IoT and FDD LTE
- Simulated FDD coverage based on cell distribution

🔖 Projects

Signal Optimization for Wireless Information and Power Transmission   2019 – Present

We investigated a novel harvester nonlinear model based on the Taylor expansion of diode I–V characteristics and performed a signal design on top of it. A superposition of modulated information waveform and multisine power waveform is jointly optimized with the power splitting ratio, according to the CSI and rate requirements. Based on non-convex posynomial maximization, the iterative algorithms were demonstrated to benefit the rate-energy tradeoff especially for high SNR and multi-band transmissions. It may help trillions of low-power devices to get rid of batteries by efficiently utilizing the energy and information carried by RF signals.

Cross-Layer Optimization for 4G Broadband Wireless Communication Networks   2018

We proposed an adaptive low-complexity cross-layer design across the PHY and MAC layer to determine the data packet transmission order according to the service characteristics and CSI. PD and M-LWDF scheduling were combined with M-MWC and M-WF allocation for flexible traffic control. With a proper packet selecting strategy, the proposed algorithm was proved to increase the spectrum and power efficiency while significantly reduce the delay, outage, and packet drop rate. The possibility of extending current networks to support new types of traffic as haptic was investigated.

☰ Courseworks

- Arduino: 3D scanner, digital clock, smart toy car
- Signal: adaptive filter design, sparse signal recovery, FRI signal sampling and reproducing
- Vision: image categorization by RF, digit generation by GAN
- Wireless: spatiotemporal DS-CDMA, LTE SU-MIMO

♡ Skills and Achievements

- Focus: wireless communication, signal processing, machine learning
- Background: array processing, coding theory, data science, electronics, information theory, optimization
- Strength: problem-solving, self-learning, team-working
- Programming: MATLAB, C, C++, Python
- Honor: university achievement award(2016), IET student prize(2018)