SONG WANG

Address
No.10 Xitucheng Road
Haidian District
Beijing, China 100876

Contact
Email: songwang2017@163.com
Web: `s0ngwang.github.io`
Phone: (+86)186-3505-2367

INTERESTS Mobile Sensing, Wireless Networking and Communication theroies.

EDUCATION B.E., Internet of Things Engineering
Beijing University of Posts and Telecommunications, Beijing, China
Major GPA of junior year: 90.70/100 (Top 3 %)

EXPERIENCE

IoT Laboratory, Beijing University of Posts and Telecommunications
Research Assistant Supervised by Prof Anfu Zhou *3/2017-Present*
This project aims to address channel under-utilization problem in Multi-User Multiple Input Multiple Output (MU-MIMO) system by scheduling multiple frames for each stream in a dynamic programming manner.

- Built the system model as knapsack problem where MAC frame are abstracted and quantified as items while TXOP as a knapsack.
- Developed the algorithm based on dynamic approach for knapsack where the orthogonality and subsequent interference are considered.
- Optimized the algorithm using polynomial time approximation scheme that approximates the optimal result, significantly reducing time complexity.

Information Science Group (ISG), Rensselaer Polytechnic Institute
Research Intern Supervised by Prof Ali Tajer *7/2017-10/2017*
This project aims to apply machine learning algorithms to Cognitive Radio (CR) system and enables CR users to perform efficient spectrum sensing and predicting. It utilizes the temporal and spectral dependencies within sub-bands and builds graphical models for inference and prediction.

- Quantified the dependencies within observed power vectors in Cooperative Spectrum Sensing (CSS) system and the ground truth of occupancies of subbands.
- Projected the power vector and occupancies to an Undirected Graphical Model (UGM) based on their dependencies
- Captured the temporal dependencies between consecutive occupancy states using the Hidden Markov Model (HMM)
- Developed a mechanism that trains UGM and HMM parameters on historical data and efficiently infers and predicts hidden states of sub-bands with partial sensing results based on UGM and HMM

Queen Mary University of London (QMUL), London, UK
Exchange Student Supervised by Dr. Jesús Requena Carrión *1/2017-2/2017*
This project aims to build prototype wearable game controllers using conductive fabric (E-textiles) and design wireless transmission system for controller and console.

- Calculated the resistance variance of E-textiles at different motion of user and realized the controller with Ardunio Uno and voltage meter
- Redefined the data frame of 802.15.4 (ZigBee) and designed wireless system for multiple controllers

PUBLICATIONS S. Wang, J. Huang, A. Zhou, "KPad: Maximizing Channel Utilization for MU-MIMO Systems using Knapsack Padding", submitted to *IEEE International Conference on Communications (ICC) 2018*.

SKILLS Experienced in Matlab modeling for communication systems
C, Python, Java programming & Android development, 8051 Assembly
LaTeX markup language, HTML/CSS & web design, Photoshop