SONG WANG

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EDUCATION

B.S., Internet of Things Engineering
Beijing University of Posts and Telecommunications, Beijing, China
Major GPA: 91.40/100 (Top 3%)

Key Modules: Principles of Communications(97/100), Probability Theory and Stochastic Process(91/100), Signal and Systems Theory(93/100), Discrete Techniques for computing(98/100), Advanced Mathematics(95/100)

EXPERIENCE

ECSE Department, Rensselaer Polytechnic Institute
Research Intern Supervised by Prof Ali Tajer *7/2017-Present*
This project aims to apply machine learning alogrithm to cognitive radio system and enable CR users to perform efficient spectrum sensing & prediction. It utilizes the temproal and spectral dependencies within subbands and builds graphical models for inference and predicion.

- Quantified the dependencies within observed power vector in Cooperative Spectrum Sensing (CSS) system and the ground truth of occupancies of subbands.
- Projected the power vector and occupancies to a Undirected Graphical Model (UGM) based on said dependencies
- Captrued the temproal dependencies between consecutive occpuancies states using Hidden Markov Model (HMM)
- Developed a mechanism that trains UGM and HMM parameter on histrical data and efficiently infers and predicts hidden states of subbands with partial sensing results based on UGM and HMM

IoT Laboratory, Beijing University of Posts and Telecommunications
Research Assisant 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 selecting and appending frames to each transmission opportunity (TXOP) in a dynamic programming manner.

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

Queen Mary University of London (QMUL), London, UK
Exchange Student Supervised by Dr. Jesus Requena Carrion *1/2017-2/2017*
This project aims to built prototype of wearable game controller 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

- Developed a algorithm that calibrates the mearsurement of E-textiles against fatigue effect

SKILLS

Experienced in Matlab modeling for communication system, statistics model and machine learning algorithm
C, Python, Java programming & Android development, mySQL
Arduino programming, 8051 Assembly programming, Software-Define-Radio design
LaTeX markup language, HTML/CSS & web design, Photoshop