Jian-Yuan (Jet) **Yu**

PH.D. STUDENT · ECE · VIRGINIA TECH

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Education

Virginia Tech — *Blacksburg, VA*

PH.D. IN COMMUNICATION ENGINEERING — *Aug. 2017 - PRESENT*

- Key courses: Advanced Machine Learning, Software Designed Radio.

NTU(National Taiwan University) — *Taipei, Taiwan*

M.S. IN COMMUNICATION ENGINEERING — *Sept. 2014 - PRESENT*

- GPA: 3.50/ 4.00 **[Full Transcript]**
- Key courses: Design of Wireless Communication Networks, Wireless Access Network, Introduction of Optimization, Digital Communication Integrated Circuits Design, Data Science, Machine Learning and Having it Deep and Structured.

BIT(Beijing Institute of Technology) — *Beijing, China*

B.S. IN INFORMATION ENGINEERING — *Sept. 2009 - July. 2013*

- GPA: 3.38/ 4.00 **[Full Transcript]**
- Thesis: Design of GPS Signal Processing Simulator on MFC
- Key courses: Digital Signal Process, Random Signal Process, Digital Communication Principle, Programming Approach(C&C++), Data Structure & Algorithm Design, Computer Principle & Application, Fundamental of Circuitry Analysis, Introduction of Analog Circuit, Digital Circuit.

Research Interest

- Software Designed Radio
- Wireless Sensor Network/ Vehicle Transmission System / Body Area Network
- 5G Technology/ Cellular Network
- Data Mining

Skills

Programming C/C++, Matlab, Shell, Python, Java, Latex, HTML/CSS, Verilog, R, SQL.

Toolkit& Library NS3, ITPP++, OPNET, OpenWSN, Mininet,vim, gdb. Android Studio, Xcode, Tensorflow, Caffee, Keil.

Publications

- **Jianyuan Yu**, Hung-Yun Hsieh, "Application of Multiple Interfaces and Balanced Tree Routing of Low-delayed Convergecast in IEEE802.15.4e TSCH M2M Networks", in **IEEE ICCS** 2016. **[pdf link]**(In press).
- **Jianyuan Yu**, Hung-Yun Hsieh, "Building Cost-Balanced Routing Trees for Fast Data Collection in IEEE 802.15.4e TSCH Networks", in ICEECS 2016. **[pdf link] [post link]**

Selected Competition Experience

- **Beijing College-student Electronics Design Contest 2012**
  - **Broadband Automatic Gain Controller**. A 8-hour marathon contest, quickly learn to operate the assigned units like ADC/DAC or amplifiers, design feedback control method and welding the circuit board, fail due to mistakes on installation of the power unit.**[pdf link]**
- **The Mathematical Contest in Modeling MCM2011**
  - Model and analyze the strategy of a skiing player to achieve the high score on U-field. **[pdf link]**
- **2B Hackathon 2015**
  - Data mining the rule behind the employee resignation of a company.

Research Experience

MPRG Lab, Virginia Tech — *Blacksburg*

Under the instruction of Prof. Michael Buehrer — *Sept. 2017 - present*

- **SC2 DAPRA - Spectrum Collaboration Challenge**
  - Explore Markov Decision Processing mechanism on sharing channels to get maximum network throughput.

TONIC Lab, NTU — *Taipei*

Under the instruction of Prof. Hung-Yun Hsieh — *Sept. 2014 - Jul. 2017*

- **Advanced Scheduling of IEEE802.15.4e TSCH Wireless Networks**
  - Explore different metric of matching and coloring to achieve faster convergecast.**[pdf link]**
  - Design cost balanced tree topology and implement multiple interface on the coordinator for achieving faster convergecast, parts of the work is in **Publications**.
  - Allocate resource for retransmission to ensure reliability under lossy channel.- Stochastic Optimization method to schedule.**[pdf link]**

Radar Technology Research Lab, BIT — *Beijing*

Under the instruction of Prof.Feng Liu — *Mar. 2013 - June. 2013*

- **Design of GPS Signals Processing Simulator on MFC.**
  Work of B.S thesis, implement algorithms from the GPS standards on the MFC interface, including the basic part like modulation, error coding, synchronization adjustment and PLL, then show the plot figures with extensive toolkits under different settings.

Intern & Work Experience

Virginia Tech — *Blacksburg, VA*

Teaching Assistant — *Sept. 2017*

- EE2534 Microcontroller and Interfacing, grading and help student debugging or solve problems with their hand-on projects

Co-Exceed Consulting Ltd — *Beijing*

Intern — *Sept. 2012*

- Learning the standard of practice of WCDMA PTN debugging, and solve similar problem occurs in realistic networks.

Selected Past Projects

- **Smart Light**
  Automatically switch on or off lights according to the user position in a house, implement on the TI Soc CC2530 with luminance sensor.**[Youtube Link]**
- **Simulations of DSRC protocol with NS3**
  Analyze the performance of Dedicated Short Range Communication (DSRC) protocol with different QoS requirements or traffic pattern with NS3 simulator.**[pdf link]**
- **Multiuser MIMO with LTE codebook precoder**
  Propose precoding schemes like choosing eigen vectors, selecting PMI from LTE codebook to reduce the inter-beam interference, and find the effect of the channel correlation of different users. **[pdf link]**
- **Cuisine Prediction from Recipe**
  A classification problem on Kaggle, with a training dataset around 4kMB. Step by step trial with cosine similarity, PCA reduction, xgboost(extreme gradient boosting toolkit), item split, LDA and grid search method in R or python codes, and finally reach top 5% with 82% accuracy. **[pdf link]**
- **Speech to Phonemes**
  Translate speech into phonemes as a part of speech recognition.**[pdf link]**
  - DNN, with tricks like dropout, ReLU, epoch, active function selection.
  - RNN, with tricks bi-directional, RMSPro, smoothing, trimming.
  - Structure Learning, with HMM implement.
- **Touch Screen System on MCU**
  Individual work, a MCU system with a touch screen as the interface to control LED lights, stepper motors, temperature and light sensor. Mainly design to count the people in a building in real time, be selected for presentation.