



# Ruichen Wang

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## Education

**New York University**, New York, USA – May 2017

Master of Science, Electrical Engineering, GPA 3.8/4.0

**Peking University**, Beijing, China – Jun 2015

Bachelor of Science, Astrophysics, GPA 3.0/4.0

## Experience

**ORIGIN WIRELESS AI, MARYLAND –** SEP, 2019- JUL, 2020  
**RESEARCH ASSISTANT**

- Reviewed mmWave health applications: vital signs monitoring, glucose detection, and blood oxygen monitoring. Conducted experiments to evaluate breathing rate and oxygenation relationship during sleep. Investigated methods to distinguish different sugar levels in solutions by mmWave radar. Performed liquid classification by neural networks with training data collected by TI mmWave chip.
- Analyzed 1-person and 2-person sleep monitoring with commercial WiFi devices, collected and processed several weeks' sleep data, enhanced data processing with phase boosting techniques, and implemented unsupervised clustering methods for sleep stage classification.
- Implemented Xcode version acoustic distance sensing. Implemented C++ version step counting in walk detection engine. Helped with hardware built.

**INTELLIGENT FUSION TECHNOLOGY, MARYLAND –** MAY, 2017- APR, 2018  
**RESEARCHER**

- Built mmWave ray tracing tool based on GPU and analyzed ground-to-air/air-to-air links.
- Did research in 5G UAV mmWave channels and made test plans for mmWave UAV measurements in urban environments.
- Improved propagation model prediction accuracy and computing efficiency in the ray tracing algorithm with master thesis results.

**NYU WIRELESS CENTER, NEW YORK –  
RESEARCH ASSISTANT & TEACHING ASSISTANT**

SEP, 2016 - MAY, 2017

- Worked in the 5G summer campaign group which did millimeter-wave measurements in urban areas in New York city and rural areas in Virginia.
- Built a new propagation model in UHF accounting for street openings in urban street canyons, based on data from industries.

**NATIONAL ASTRONOMICAL OBSERVATORIES OF CHINA (NAOC), BEIJING –  
RESEARCH ASSISTANT**

SEP, 2014 - MAY, 2015

- Simulated the corrugated horn antenna model in High Frequency Structural Simulator (HFSS), and expanded the original low frequency model to a higher frequency, which was selected as a candidate feed antenna model for Five-hundred-meter Aperture Spherical Radio Telescope (FAST).

## **Publications**

- (1) MacCartney Jr, G. R., Sun, S., Rappaport, T. S., Xing, Y., Yan, H., Koka, J., **Wang, R.**, & Yu, D. (2016, October). Millimeter wave wireless communications: New results for rural connectivity. In Proceedings of the 5th Workshop on All Things Cellular: Operations, Applications and challenges (pp. 31-36).
- (2) C. N. Macwan, J. S. Lu, I-Tai Lu, **Ruichen Wang**, Ya Hui Wu and J. A. Blaha, "Extension of the ITU-R P.1411-8 urban path loss models to high antennas," 2017 IEEE Long Island Systems, Applications and Technology Conference (LISAT), Farmingdale, NY, USA, 2017, pp. 1-5.
- (3) **Ruichen Wang**, I-Tai Lu, M.S. Thesis, A New Line-Of-Sight Propagation Model Accounting For Street Openings In Urban Street Canyons, 2017.
- (4) **Wang R**, Xiong W, Xu Y, et al. Comprehensive radio frequency link analysis of ground-to-air/air-to-air communication in urban and rural scenarios[C]//2018 IEEE Aerospace Conference. IEEE, 2018.
- (5) **Wang R**, Lu J, Xu Y, et al. Intelligent path loss prediction engine design using machine learning in the urban outdoor environment[C]//Sensors and Systems for Space Applications XI. International Society for Optics and Photonics, 2018, 10641: 106410J.

## **Skills**

- Working knowledge: MATLAB/Python
- Basic knowledge: C/C++/Java/R

## **Volunteer Work**

- Chess Coach at Chengdu Dark Blue Chess Club Summer and winter, 2011-2015

## **Extracurricular Activities**

- Student Musician in Chinese Music Institute at PKU 2011-2015
- Chinese Chess Union Master Since 2008