Bowen REN

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EDUCATION

City University of Hong Kong, Hong Kong SAR, China

PhD in Electrical Engineering   Till Now

Concentration: Applied Electromagnetics

University of Michigan, Ann Arbor, MI, USA

Master of Engineering in Electrical Engineering   May, 2021

Concentration: Applied Electromagnetics and RF Circuits

Tongji University, Shanghai, China

Bachelor of Engineering in Electronic and Information Engineering   Jun, 2019

RESEARCH EXPERIENCE

City University of Hong Kong, Hong Kong SAR, China

Wireless Tracking of Ultrasound Scanner, SKLTMW, Dr. Alex WONG   Sep, 2021 - Present

- Track the position and orientation of the hand-held ultrasound scanner based on the fusion of Ultra-WideBand (UWB) technology and Inertial Measurement Unit (IMU) data.
- Reconstruct the 3D structure with the 2D ultrasound cross-section image and the position and orientation information of the scanner.
- Achieve position tracking accuracy of 1 mm.

University of Michigan, Ann Arbor, MI

Improvement of KA Method, Radlab, Prof. Leung Tsang   Jun, 2020 - Present

- Introduce tilted plane to traditional Kirchhoff Approximation (KA) method for electromagnetics scattering problems on rough surface.
- Derive Partially Coherent Patch Model on solving the scattering problems on rough surface with DEM and tilted plane. Plot bistatic scattering coefficients versus scattering angle.
- Check the accuracy of Partially Coherent Model by comparing with Numerical KA results.

Optimization of Antenna ENVELOP, Radlab, Prof. Kamal Sarabandi   Feb, 2020 - Jun, 2020

- Optimize antenna ENVELOP for underground detecting.
- Reduce the size of the antenna in HFSS, with gain of over 4.0 dB, reflection coefficients of under 10.0 dB, and size of 440*390*136 mm.
- Obtain antenna with smaller size and lower profile. Get familiar with HFSS.

Tongji University, Shanghai, China

Traffic Flow Model Research, CASCO AI Lab, Prof. Zhipeng Li   Apr, 2017 - Oct, 2018

- Optimize inhomogeneous traffic flow model.
- Establish a model to study the factors that cause regular operation of vehicles to be broken due to small disturbances. Simulate behavior of vehicles under different conditions.
- Perform system linear stability analysis with power series method and read data with MATLAB for drawing referring to software and program of similar researches.

PROJECT EXPERIENCE

University of Michigan, Ann Arbor, MI

LDO design Using Cadence, EECS 413 Monolithic Amplifier Circuits, Prof. Ehsan Afshari   Sep, 2020 - Dec, 2020
- Design and simulate a low dropout voltage regulator (LDO) using Cadence.
- Design the schematic and layout of the Op-Amp, feedback network, and compensation network. Simulate the PSRR, quiescent current, and phase margin.
- Get familiar with Cadence and analog amplifier design process. Obtain the LDO with PSRR>50 dB, IQ<50 uA, PM>50 deg.

WLAN Receiver Design Using ADS, EECS 411 M-Wave Circ, Prof. Amir Mortazawi   Sep, 2019 - Dec, 2019
- Design and simulate a double down conversion WLAN receiver using ADS.
- Design the schematic and layout of the LNA, filters, couplers, mixer, etc. in the WLAN receiver front-end. Simulate the gain, noise figure and IIP3 of the receiver using ADS.
- Get familiar with ADS and RF front-end. Obtain the RF receiver with gain of 40 dB, noise figure of 7.7 dB, and IIP3 of -34 dBm.

Tongji University, Shanghai, China

Neural Network Algorithm for Image Classification, Summer Project, Dr. Shangzhi Xu
- Process MNIST digital images using neural network.
- Identify and classify 10,000 images using neural network algorithms, with error rate 1/10,000
- Understand the practical application of neural network. Get familiar with Python language.

PUBLICATIONS

Conference Paper *'Fine Scale Partial Coherent Model Based on lidar Elevation Measurements for GNSS-R Applications'* published by URSI GASS 2021.

Journal Paper 'Analytical Kirchhoff Solutions (AKS) and Numerical Kirchhoff Approach (NKA) for First-Principle Calculations of Coherent Waves and Incoherent Waves at P Band and L Band in Signals of Opportunity (SoOP)' published by PIER 2021.

HONORS AND AWARDS

Grand Prize of **2018 TIIC National Undergraduate IoT Design Contest**	Aug, 2018
First Prize **Outstanding Student Scholarship** of Tongji University (Top 1%)	Oct, 2017
Excellent Student Honor of Tongji University (Top 3%)	Jan, 2017
Second Prize **Outstanding Student Scholarship** of Tongji University (Top 20)	Dec, 2016
Third Prize of **the 8th National Undergraduate Mathematics Competition** (Top 30 of Shanghai)	Nov, 2016
Third Prize of **Tongji University General Physics Competition** (Top 50)	Jun, 2016

SKILLS

Software: C++, Python, Matlab, Latex, ADS, HFSS, FEKO, Cadence
Language: Chinese (native), English (proficient)