Shih-Ming Huang

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Research Interests

RF Circuits for Bioelectronics/ Phased Array/ Antenna/ Metamaterial/ Monolithic Microwave Integrated Circuits/

Education & Position

National Taiwan University Sep. 2016 – Now

B.S. in Electrical Engineering and M.S. in Communication Engineering

- Advisor: Dr. Shih-Yuan Chen
- Research focus: spatially reconfigurable phased array
- Cumulative GPA: 3.79/4.30 (B.S.); 4.30/4.30 (M.S.)

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan Aug. 2020 – Now

Student Research Assistant

- Advisor: Dr. Ming-Tang Chen and Mr. Ted Huang
- Research focus: 4-12.4 GHz cryogenic quadrature hybrid coupler

Research Experience

- **Spatially Reconfigurable Phased Arrays –** *Project Leader* Aug. 2020 – Now
  - A phased array whose antenna elements are separately carried by multiple UAVs
  - Drafted proposals to and won sponsorship from Ministry of Science and Technology, Taiwan
- **A 4-12.4 GHz Quadrature Hybrid Coupler for ALMA Observatory –** *Designer* Aug. 2020 – Now
  - A broad-side coupled quadrature hybrid with ± 0.4 dB amplitude and ± 4° phase imbalance
- **Beam Visualization System for Phased Array Education –** *System Designer* Feb. 2020 – June 2020
  - An educational platform for students to implement and observe their phased arrays
- **A Dual-Band Wearable Open-Sourced Radar System –** *System Designer* July 2019 – July 2020
  - An FMCW radar using 5.8-GHz and 915-MHz ISM band controlled by Raspberry Pi

Publication

- Shih-Ming Huang, Wei-Cheng Chen, Yun-Ting Tsai, Ethan Fang Wu, Shih-Yuan Chen, **"UMPS: Ultrasound-Microwave-Fused Phase Synchronization for UAV-Based Phased Arrays**," in *Proc. IEEE Asia-Pacific Microwave Conf.*, 2021 (Accepted).

Awards

- **2020 IEEE AP-S Student Design Contest — 1st Place** July 2020
  International student design contest held by IEEE Antennas and Propagation Society
- **Outstanding Performance Scholarship of National Taiwan University** Dec. 2020
  Award for students who win honor for National Taiwan University by outstanding achievements
- **Professor Chun-Hsiung Chen Scholarship for Talent Cultivation in Electromagnetics** Jan. 2021
  Scholarship offered by Taiwan Electromagnetic Industry-Academia Consortium for students' excellent performance in electromagnetics-related research and contests
- **Class of 1975 Scholarship for Innovation in Technologies** Feb. 2021
  Scholarship offered by the alumni of National Taiwan University
- **Dean's List Award of National Taiwan University** Nov. 2020
  Award for the top 5% students of the department in each semester

Skills

- **Electromagnetic Simulation Software**
  Ansys HFSS, Keysight ADS, Sonnet, Altair Feko, and CST Studio
- **Microwave Devices Measurement**
  NSI2000 Antenna Measurement System, Vector Network Analyzer, and Spectrum Analyzer
- **Embedded Systems**
  Arduino, Raspberry Pi, and ARM Cortex-M processers (STM32 and Microchip)
- **PCB Layout and Fabrication**
- **General Purpose Software**
  C++, Python, Matlab, HTML, and CSS
- **3D Modeler**
  Solidworks and Fusion 360

Leadership

- **Advanced Antenna Laboratory –** *Organizer of Training Session* Sep. – Oct. 2021
  Teach M.S. students to design and implement a phased array controlled by Arduino
- **IEEE Student Branch at National Taiwan University, Taipei Section–** *Vice Chair* Jan. 2021 – Now
  Organize cross-disciplinary interaction among 40+ members
- **Photography Club at National Taiwan University–** *Director* Aug. 2017 – Feb. 2018
  Manage activities with 40+ cadres and 150+ club members

Relevant Courses

- **Electromagnetics**
  Electromagnetic Compatibility (A+); Numerical Method (A+); Electromagnetics Theories (A+);
  Theory of Microwave Circuits and Devices (A+); Lab on Electromagnetic Waves (A+); Antenna (A+)
- **Integrated Circuits**
  Monolithic Microwave Integrated Circuits (MMIC) Engineering (A+);
  Power Amplifier Design for Wireless Communications (Studying)
- **Signal Processing**
  Advanced Digital Signal Processing (A+)
- **Others**
  Logic Your Way into Writing (A+); Patent Opposition and Infringement (A+)

Teaching Assistant

- **RF Microwave Wireless Systems** Fall 2020/ Fall 2021
  Assist in designing, grading, and writing solutions to exams
- **Logic Your Way into Writing** Fall 2021
  Assist students in practicing critical writings and debates
- **Electrical Engineering Lab for Electromagnetic Waves** Spring 2021
  Design new experiments and assisting students to complete each experiment
- **Antenna** Spring 2020
  Design a beam visualization system for explaining the rationale of phased arrays