

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: 3.70/4.30 (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. Yau-De 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 $\pm 4^\circ$ phase imbalance
- ♦ **Beam Visualization System for Phased Array Education – System Designer** Feb. 2020 – June 2020
 - An educational platform allowing students to easily 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 processors (STM32 and Microchip)
- ♦ **PCB Layout and Fabrication**
- ♦ **General Purpose Software**
C++, Python, Matlab, HTML, and CSS

Leadership

- ♦ **Advanced Antenna Laboratory – Organizer of Training Session** Sep. – Oct. 2021
Teach M.S. students to design and implement a functionable phased array controlled by Arduino
- ♦ **IEEE Student Branch at National Taiwan University, Taipei Section, Region 10 – 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+); Antenna (A+); Numerical Method (A+); Electromagnetics Theories (A+); Theory of Microwave Circuits and Devices (A); Lab on Electromagnetic Waves (A+)
- ♦ **Integrated Circuits**
Microwave Monolithic Integrated Circuits (A+); Power Amplifier (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 of 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