

Shih-Ming Huang

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Research Interests

Phased Arrays/ Antennas/ RF Circuits for Bioelectronics/ 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 Sep. 2020 – Now

Graduate Student Research Assistant

- Advisor: Mr. Yau-De (Ted) Huang and Dr. Ming-Tang Chen
- 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 Astronomical Receivers** – *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 – Jun. 2020
 - An educational platform for students to implement and observe their phased arrays
- ♦ **A Dual-Band Wearable Open-Sourced Radar System** – *System Designer* Jul. 2019 – Jul. 2020
 - An FMCW radar using 5.8-GHz and 915-MHz ISM band controlled by Raspberry Pi

Publication

- ♦ **S.-M. Huang, W.-C. Chen, Y.-T. Tsai, E. F. Wu, S.-Y. Chen, "UMPS: Ultrasound-Microwave-Fused Phase Synchronization for UAV-Based Phased Arrays,"** in *Proc. IEEE Asia-Pacific Microwave Conference, 2021.*

Awards & Scholarship

- ♦ **2020 IEEE AP-S Student Design Contest — 1st Place** Jul. 2020
 - International student design contest held by IEEE Antennas and Propagation Society (AP-S)
- ♦ **Outstanding Performance Scholarship of National Taiwan University** Dec. 2020
 - Award for students who win honor for National Taiwan University by outstanding achievements
- ♦ **Scholarship for Graduate Student from Academia Sinica, Taiwan** Sep. 2020 – Jul. 2022
 - A long-term scholarship encouraging graduate students to participate in the research of Academia Sinica
- ♦ **Professor Chun-Hsiung Chen Scholarship for Electromagnetic Talent Cultivation** 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

- ◆ **3D Modeler**

Solidworks and Fusion 360

Leadership

- ◆ **Advanced Antenna Laboratory** – *Organizer of Training Session*

Sep. 2021 – 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 interdisciplinary 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 for 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