Chi-Yao Huang

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Education

- **Arizona State University (ASU)** — Tempe, AZ
  Ph.D in Computer Science — *Current*
- **Arizona State University (ASU)** — Tempe, AZ
  M.S. in Robotics and Autonomous Systems (AI Track); GPA: 4.00/4.00 — *Aug 2021 – May 2023*
- **National Taiwan University (NTU)** — Taipei, Taiwan
  M.S. in Mechanical Engineering; GPA: 3.83/4.3 — *Sep 2015 – Jun 2017*
- **National Sun Yat-Sen University (NSYSU)** — Kaohsiung, Taiwan
  B.S. in Mechanical and Electro-Mechanical Engineering; GPA: 3.19/4.0 — *Sep 2010 – Jun 2014*

Experience

- **Arizona State University (ASU)** — Tempe, AZ
  Research Assistant - Prof. Yezhou Yang — *Aug 2021 – Current*
  - **VOCAL: Visual Odometry via ContrAstive Learning:** Integrated Bayesian inference with representation learning to align similar camera states in a coherent latent space for enhanced multimodal compatibility.
  - **TOYOTA Pose Estimation in Ariel Environments:** Developed high-altitude pose estimation for ariel robots using IR and IMU sensors under varying weather conditions.
  - **3D Landmark Reconstruction for Robot Localization and Mapping:** Employed learning-based 3D reconstruction and semantic labeling to enable robots to jointly optimize their trajectory and object poses.
- **Advanced and Creative Team, HTC VIVE (Acquired by Google)** — New Taipei, Taiwan
  Core Member & Strategic Innovator, Team Lambda (VR/AR Innovations) — *Sep 2017 – Feb 2021*
  - **Core Contributions:** Played a pivotal role as a core team member—spearheading design reviews, mentoring junior engineers, and driving key technical decisions that shaped breakthrough VR/AR technologies.
  - **VIVE COSMOS:** Developed a multi-camera VR tracking system with 0.4 mm accuracy by utilizing multi-camera Bundle Adjustment and designing a mothership SLAM system for all VR products. Product Overview Demo Video
  - **VIVE FOCUS 3:** Led a team to prototype an MR system integrating gesture and tightly-coupled visual-inertial SLAM tracking, achieving trajectory jitter below 0.1 mm and a 4× speed-up on embedded systems. Product Overview
  - **VIVE FLOW:** Collaborated with hardware and firmware teams to resolve CPU loading and thermal issues in an AR device. Product Overview
  - **Scene:** Engineered a voxel-based obstacle mapping system for VR safety, integrating semantic maps for real-world interactions.
- **NTU Robotics Lab, National Taiwan University** — Taipei, Taiwan
  Graduate Student and Vice System Manager - Prof. Han-Pang Huang — *Sep 2015 – Jun 2017*
  - **Master Thesis: 3D Reconstruction and Path Planning with Signed Distance Function:** Fused optical flow with feature points for efficient SLAM; modified bundle adjustment using Lie groups and quaternions; implemented voxel hashing for dense mapping; integrated SLAM with biped robot path planning.
  - **Humanoid Robot:** Designed ZMP trajectories to enable robust biped locomotion on uneven terrains.
  - **Vice System Manager:** Developed orientation materials and managed robotic equipment including robotic arms and mobile robots.
- **Company of Air Defense Artillery Battalion, R.O.C. Army** — Taiwan
  Battalion Dispatcher — *Sep 2014 – Sep 2015*
  - **:** Managed hundreds of vehicles and anti-air systems during military exercises.
- **National Sun Yat-Sen University** — Kaohsiung, Taiwan
  Undergraduate Student - Prof. Yaw-Terng Su — *Sep 2010 – Jun 2014*
  - **Commercial Vehicle Speed Control System:** Designed a PID controller for vehicle speed regulation.
  - **Stairlift for Elderly People:** Developed a PLC-based stair climbing system to enhance mobility for the elderly.

Research Areas

- 3D Computer Vision, Spatial Understanding, Visual Odometry, SLAM, Robotics, Autonomous Systems

Awards

- **Ira A. Fulton Schools of Engineering Fulton Fellows Award, ASU**
- **Student with Distinction, Arizona State University**

Skills

- **Programming Languages:** C/C++, Python, JavaScript
- **Libraries & Tools:** OpenCV, Eigen, Ceres, PyTorch, Keras, OpenGL, SIMD, CEVA, Hexagon

Languages

- Mandarin (Native), English (Fluent)