

Yuan-Peng (Patrick) Yu

Software Developer

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🌐 <https://patrick-yp-yu.github.io/>

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PROFESSIONAL SUMMARY

- Skilled in **C++** and **Python**. Accomplished multiple projects in **computer vision** and **data science** field.
- Experience in simultaneous localization and mapping (**SLAM**) methods using cameras and LIDARs.
- Proficient in **the back-end of Integrated Circuits (IC) design flow** for mixed-signal circuits.

EDUCATION

Research Assistant

NetBot Laboratory, Texas A&M University

📍 College Station, TX

📅 June 2016 - Present

- Conducted research on visual simultaneous localization and mapping (SLAM) to advance the development of autonomous vehicles. Achieved tasks include camera calibration, features detection, and camera pose estimation. Enabled vehicles to detect the surroundings and build explored maps.
- Implemented the automatic map initialization in the current state-of-the-art algorithm, ORB-SLAM. Computed the mathematics model and acquired the camera pose from any scene pairs. Investigated the limitations of ORB-SLAM and proposed methods to improve indoor SLAM performances.
- Created an image stitching program to present a panoramic image. Detected and matched image keypoints by the SIFT algorithm. Automatically estimated homography matrix through the RANSAC method. Generated a 180° view landscape image by combining multiple images.

Bachelor of Science in Computer Engineering

Texas A&M University, College Station

📍 College Station, TX

📅 September 2014 - May 2017

- Overall GPA: 3.75/4.0 Major GPA: 3.82/4.0
- Graduation honor as an Undergraduate Research Scholar
- Analyzed the top 4000 Kickstarter projects to acquire investment insights. Applied web scraping skills to collect data. Built database by Python Pandas and NumPy. Utilize Scikits-learn to cluster data trend and classify labels. Concluded 8 business analyses through data visualization.

Associate of Science in Electronic Engineering

National Taipei University of Technology

📍 Taipei, Taiwan

📅 September 1994 - June 1999

- Overall GPA: 3.6/4.0 (top 10%)
- Earned the Distinguished Student Award in 1998 & 1999, respectively. Awarded students are excellent in ethical, intellectual, physical education, and social skills.
- Built an application to diagnose the possible locations of brain cancer in MRI. Developed 3 detection algorithms in C++. Reconstructed a 3D model from 2D MRI to show the relative positions.

EXPERIENCE

Senior IC CAD/Physical Design Engineer

Jian Yu Co., Ltd

📍 Taipei, Taiwan

📅 October 2009 - August 2014

- Led project-based teams to shorten physical design flow. Created at least 50 kinds of Cadence SKILLs, Parameterized Cells, and Dracula Command files to reduce processing time. Completed more than 40 tape-out and the projects were done ahead of schedule.

IC CAD/Layout Engineer

Leadtrend Technology Corporation

📍 Hsinchu, Taiwan

📅 June 2004 - September 2009

- Implemented AC/DC controller ICs in different processes, ranging from Bipolar/CMOS/DMOS high-voltage processes to mixed-signal processes. Jobs include IC full chip floorplanning, place and route, and physical verifications. Completed at least 30 projects. The works became star products of the company and contributed to the successful initial public offering of the start-up company.

Management Information System Engineer

Air Grand Corporation

📍 Taipei, Taiwan

📅 July 2001 - May 2004

- Provided technological services to 50 users. Constructed the company website and network infrastructures. Completed the project within 70% of its budget and achieved a 90% satisfaction.

SKILLS

Programming:

C C++ Python
Matlab GDB debugger
git github \LaTeX
CMake HTML CSS
Bootstrap

Computer Vision:

Multiple View Geometry
SLAM Visual SLAM
ORB-SLAM OpenCV
Unity Images Stitching
Features Detection
SIFT Pose Estimation
3D Reconstruction
Camera Calibration
Perspective Rectification

Data Mining:

SQL XML Pandas
Web Scraping
Beautiful Soup

Machine Learning:

NumPy SciPy
Scikits-learn NetworkX

Data Visualization:

Matplotlib Seaborn
Plotly Pygal

ASIC Design Flow:

HSPICE Mentor Calibre
Cadence SOC Encounter
Virtuoso Verilog
Floorplan Place & Route
Layout Versus Schematics
Design Rules Checking
Layout Parasitic Extraction

Certificates:

Digital IC Design
Analog IC Design
System-on-Chip Design
Semiconductor Physics
Semiconductor Devices