

# 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.
- Experienced in **the back-end of Integrated Circuits (IC) design flow** for mixed-signal circuits.
- An adaptive, resourceful and detail-oriented problem-solver. Resilient in fast-paced development.

## 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 proper 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 find investment insights. Applied web scraping skills to collect data. Built database by Python Pandas and NumPy. Used Scikits-learn to cluster data trend and classify labels. Concluded at least 10 business suggestions 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 a team of 5 people 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  
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