Yuan-Peng (Patrick) Yu

SOFTWARE ENGINEER · Authorized to work in the U.S.
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Experience

Research Assistant – NetBot Laboratory, Texas A&M University *College Station, Texas, June 2016 - June 2018*

- Conducted research on visual simultaneous localization and mapping (SLAM) to advance the development of autonomous robots and autonomous vehicles. Researched SLAM algorithms to allow robots to explore the indoor environment and build maps without GPS. Devised experiments to compare algorithms in different frameworks. Achieved tasks include camera calibration, features detection, and camera pose estimation. Concluded the finding in the thesis "The ORB-SLAM Examination in the Textureless Indoor Environment" and presented at 2017 Texas A&M research symposium.

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 accelerate layout generation and verification. Completed more than 40 tape-outs and the finished projects were done ahead of schedule.

IC CAD/Layout Engineer – Leadtrend Technology Corporation *Hsinchu, Taiwan, June 2004 - September 2009*

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

Skills

Programming:	C++, C, Python, MATLAB, HTML, CSS, Bootstrap 4, git/github, Markdown, OpenCV, LaTeX, SQL, XML, CMake, Anaconda
Robot Vision:	Multiple View Geometry, Simultaneous localization and mapping (SLAM), Visual SLAM, ORB-SLAM, Camera Calibration, Perspective Rectification, SIFT, SURF, Image Stitching, Feature Detection, Pose Estimation, 3D Reconstruction, Unity
Machine Learning:	Python Pandas, NumPy, Scikits-learn, Web Scraping, Beautiful Soup, SciPy, NetworkX, Matplotlib, Seaborn, Plotly
IC Design:	Layout Floorplan, Place & Route, Layout Versus Schematics, Design Rules Checking, Layout Parasitic Extraction, HSPICE, Cadence Virtuoso, Cadence SOC Encounter, Mentor Calibre, Verilog
Certificates:	Digital IC Design, Analog IC Design, System-on-Chip Design, Semiconductor Devices

Education

Bachelor of Science in Computer Engineering

Texas A&M University *College Station, Texas, September 2014 - May 2017*

- Overall GPA: 3.75/4.0 Major GPA: 3.82/4.0
- Graduated with honor as an Undergraduate Research Scholar

Associate of Science in Electronic Engineering

National Taipei University of Technology *Taipei, Taiwan, June 1999*

- Overall GPA: 3.6/4.0 (top 10%)
- Earned the Distinguished Student Award. Awarded students are excellent in ethical, intellectual, physical education, and social skills.

Projects

Automatic Map Initialization for ORB SLAM – Research

- Implemented the automatic map initialization, which deals with the input image frames in ORB-SLAM, the current state-of-the-art algorithm. Developed programs to compute the mathematics model and acquire the camera pose from any given two corresponding image frames. Investigated the limitations of ORB-SLAM and proposed methods to improve indoor SLAM performances. (MATLAB)

Kickstarter Projects Analysis – Data Science and Analytics

- Analyzed the top 4000 Kickstarter projects to acquire investment insights. Extracted effective elements from the Kaggle dataset. Built a database with Python Pandas and NumPy. Utilized Scikits-learn to cluster data and classify labels. Applied data visualization skills to signify 8 business assessments. (Python, Pandas, Scikits-learn, Plotly)

Environment Detecting Car – Microcomputer Systems

- Developed a remote control car to detect the surroundings and an application to build maps. Programmed on Raspberry Pi to control car movements, create a server/client WiFi connection to users, and stream a real-time webcam video. While the car explored an unknown environment, the LIDAR on car sensed the distances between the car and the surroundings. Transformed the measured points cloud to a map database. (Raspberry Pi, Python)

Panorama Photo – Robot and Computer Vision on Multiple View Geometry

- Created an image stitching program to present a panoramic image. Automatically detected and matched the corresponding features between two images by the SIFT algorithm. Estimated the homography matrix through the RANSAC method. Generated a panorama photo without distortions. (C++, OpenCV)