Varanon Austin Pukasamsombut

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EDUCATION

- University of California, San Diego Graduation: June 2017 **Cumulative GPA: 3.73**
  BS, Electrical Engineering (Machine Learning)
- Tohoku University, Japan Research Exchange Student 2014 - 2015

PROJECT EXPERIENCE

Virtual Reality Island Project in OpenGL for the HTC Vive 9/16 – 12/16

- Course project designed to combine advanced computer graphics techniques, done in a team of two people.
- Designed and programmed a cartoon-esque island using procedurally generated terrain, trees, and buildings, shadow mapping, shader programming, and virtual reality integration.
- Programmed to run in real-time using a forward rendering pipeline, written in C++ with OpenGL.

Computer Vision on an Unmanned Aerial Vehicle (UAV) 5/16 – 8/16

- Summer internship at MIT Lincoln Laboratory under the Advanced Capabilities and Systems group.
- Designed and integrated a compact, mountable platform for autonomously detecting vehicles.
- Implemented a cascade classifier using OpenCV, a convolutional neural network using a supervised learning algorithm structured with the Caffe deep learning framework, and data collection tools using Matlab.

Autonomous Quadcopter for Indoor Navigation 10/14 – 8/15

- Research project in Japan under the Field Robotics laboratory at Tohoku University.
- Designed and assembled a quadcopter for autonomous indoor navigation in enclosed, GPS-denied environments.
- Delivered multiple presentations and prepared instructional materials for future lab use.

IEEE Micromouse Project Team 9/12 – 5/14

- Designed and created a fast, palm-sized robot that autonomously navigates through a 16 x 16 cell maze.
- Lead designer for the PCB using two layers of various components: such as sensors, regulators, and MCU.
- Co-Lead programmer in charge of implementing basic artificial intelligence using path planning algorithms in C++.

Various Small Games

- Created a virtual reality 360° shooter using Unity, designed for the Samsung Gear VR headset. 10/17
- Made a short, simple RPG-styled video game using JavaFX for a course project. 4/16

SKILLS

- Programming Languages: C, C++, C#, Java, Python, GLSL, Matlab
- Experience with ROS, Linux, EAGLE PCB Design, Solidworks, OpenCV, OpenGL, Git, and Unity
- Intermediate fluency in Japanese

RELEVANT COURSEWORK

- *Computer Graphics and Animation* – Affine Transformations, Rasterization, Real-Time Lighting, Scene Graphs, Forward Rendering, Shadow Mapping, Procedural Modeling, Character Rigging, Physics Simulation
- *Linear and Nonlinear Optimization* – Least Squares, Speech Compression using Linear Predictive Coding, GPS using Gradient Descent Algorithms, Moore-Penrose Pseudoinverse, Singular Value Decomposition
- *Probability and Graph Theory* – Maximum Likelihood Estimation, Belief Networks, Bayesian Reasoning, Markov Networks, Factor Graphs, Clique Graphs, Expectation Maximization, Hidden Models
- *Linear Systems and Controls* – Fourier Series, Laplace Transform, Sampling, Frequency Response, Stability Analysis, Feedback Control System Analysis, Bode Plots, Nyquist Plots, Nichols Plots
- *Computer Science* – Advanced Data Structures, Object-Oriented Design, Algorithmic Complexity
- *Circuits and Systems* – BJTs, MOSFET, OpAmps, Diodes, Small-Signal Models, Active Filter Design

ORANIZATIONS

- Tau Beta Pi Honor Society – Student Member 11/15 – Present
- IEEE Eta Kappa Nu Honor Society – Student Member 11/15 – Present
- Thai - American Youth Leadership Camp Wat Pa – Yearly Camp Counselor 9/12 – 9/16