

Varanon Austin Pukasamsombut

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EDUCATION

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|---|---------------------------------------|----------------------|
| ❖ University of California, San Diego | Fall 2012 – Spring 2017 | Cumulative GPA: 3.73 |
| BS, Electrical Engineering (Machine Learning) | | |
| ❖ Tohoku University, Japan | Research Exchange Student 2014 - 2015 | |

PROJECTS

Sandma - Multiplayer Dungeon Party Game 4/2017 – Present

- A competitive video game with OpenGL rendering and multiplayer connectivity made by a team of 7 people.
- Part of the graphics engine team, with responsibilities in developing the 3D rendering pipeline, scene structure and organization, importing animations, game mechanics implementation, and general game design.
- Quarter project made in the span of 10 weeks in a rapid development environment.

Project Agygio - Virtual Reality Survival Adventure in Unity 3/2017

- Virtual reality game where players can scavenge for items, craft weapons, and battle enemies to survive the night.
- Uses procedurally generated terrain, simple enemy AI, an intuitive inventory interface, and a basic crafting system.
- Made for both the Oculus Rift and HTC Vive with a focus on proper design methodologies for virtual reality.

Greed Island - Virtual Reality Project in OpenGL for the HTC Vive 12/2016

- 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) 5/2016 – 8/2016

- 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.

IEEE Micromouse Project Team 9/2012 – 5/2014

- Designed and created a fast, palm-sized robot that autonomously navigates through a 16 x 16 cell maze.
- Lead designer for circuit design and co-lead programmer in charge of implementing path planning algorithms in C++.

SKILLS

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

RELEVANT COURSEWORK

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- *Computer Graphics and Animation* – Affine Transformations, Rasterization, Real-Time Lighting, Shadow Mapping, Procedural Modeling, Character Rigging, Physics Simulation, Keyframe Animation, Shape Morphing
 - *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
 - *Computer Science* – Advanced Data Structures, Object-Oriented Design, Algorithmic Complexity, Software Design Patterns, Debugging and Testing Strategies

ORGANIZATIONS

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| • Tau Beta Pi Honor Society – Student Member | 11/2015 – Present |
| • IEEE Eta Kappa Nu Honor Society – Student Member | 11/2015 – Present |
| • Thai - American Youth Leadership Camp Wat Pa – Yearly Camp Counselor | 9/2012 – 9/2016 |