Matthew P. Burruss

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EDUCATION

Vanderbilt University, Nashville TN 2016 - 2020

B.E. Comp. Eng. 3.99/4.00 Distinctions: *Summa Cum Laude*, Program Award Comp. Eng.

M.S Computer Science 4.00/4.00 Thesis: *Enhancing the Robustness of Deep Neural Networks using Radial Basis Functions*

RELEVANT SKILLS

- Python, Javascript, C/C++
- AWS, Docker, React, Jupyter
- PyTorch, Keras, OpenCV, NumPy, D3

TECHNICAL CERTIFICATIONS & PUBLICATIONS

- **Certifications**: AWS Certified Solutions Architect – Associate Level (Credential ID: K284TTGC3N441S9J)
- **Publications**:
  - DeepNNCar: A Testbed for Deploying and Testing Middleware Frameworks for Autonomous Robots
  - Dynamic-Weighted Simplex Strategy for Learning Enabled Cyber Physical Systems
  - Augmenting Learning Components for Safety in Resource Constrained Autonomous Robots
- **Technology Blog(s):** https://burrussmp.github.io/ and https://medium.com/@matthew.p.burruss

WORK EXPERIENCE

Technology Development Program Intern, *Capital One* June 2019 – Aug. 2019

- Designed and deployed a microservice using NodeJS, Python, and Docker on an AWS ECS cluster to provide a Slack channel interface for our team's web application.
- Built an AWS Lambda solution around SNS and CloudWatch to automate real-time error detection of our team's app.

Undergraduate Researcher, *Vanderbilt's Institute for Software Integrated Systems* May 2018 – May 2020

- Co-authored a paper accepted to IEEE ISORC 2019 describing a middleware framework for testing learning algorithms for autonomous vehicles.

TA: Big Data, Operating Systems, & Introductory Programming *Vanderbilt* May 2018 – May 2020

PROJECT EXPERIENCE (Links Embedded in Title)

Sketch3D: An Augmented Reality (AR) Android Application, *Personal Project* Jan. 2020 – May 2020

- Built an AR android application using C#, Python, Unity, and the AR package Vuforia to convert hand drawn shapes into customizable 3D objects.
- Trained a PyTorch model to perform annotation segmentation and removal to allow customization of the virtual objects, such as changing the color and making the object hollow.
- Medium series: Part 1, Part 2, Part 3

Vanderbilt Underwater Navigation Display Team Lead Software Developer, *Vanderbilt* Aug. 2018 – May 2019

- Engineered a waterproof heads-up display unit to assist scuba divers in navigation and safety during dives.
- Programmed a proprietary kick counting algorithm and included critical metrics such as dive time, depth, temperature, and orientation into a hands-free unit with an in-house developed UI.

Speech to Text LED Display, *Vanderbilt* May. 2019

- Created a device with a colleague that used a Beaglebone Black to accept audio input from a microphone, converted the audio to text using an open-source speech to text library, and which then displayed the text on a LED screen

DeepNNCar, *Vanderbilt* May. 2018 – Aug. 2018

- Built an autonomous RC car using a Raspberry Pi 3, Python, and Keras to collect data, train models, and test autonomous algorithms.
- Medium series: DeepNNCar: A Testbed for Autonomous Algorithms

LEADERSHIP EXPERIENCE

Events Coordinator, *Vanderbilt Innovation and Entrepreneurship Society* April 2018 – April 2019

- Coordinated logistics (transportation, location, catering, etc.) concerning entrepreneurial and career-developing events.

EVOLVE Fall Class of 2017, *Vanderbilt University* Sep. 2017 – Oct. 2017

- Completed an 8 week leadership program which focused on interpersonal, leadership, and soft skills.

COMMUNITY INVOLVEMENT

Gili Shark Conservation Research Assistant, *Gili Air, Indonesia* May 2018

- Awarded $1750 of funding by Vanderbilt's Nichols Humanitarian Scholarship and $500 from the Office of Inclusive Excellence Scholarship to perform underwater conservation work in the Gili Islands of Indonesia.