

Charles Nimo
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Curriculum Vitae

Education

M.S. in Computer Science

University of Texas at Austin (May 2023)

GPA: 3.89/4.0

B.S. in Computer Engineering

Virginia Commonwealth University (May 2017)

Research Experience

Undergraduate Researcher | Collaborative UAV Research Group

- **GCS Dashboard | Jan - May 2017**
 - Dashboard android application, which provides GCS operator with real-time attributes of UAV through a TCP connection
 - Expanded application by developing maps display using Mapbox API's and integrating with GCS Dashboard • Maps provide real-time tracking of UAV during flight; maps of selected regions are cached and rendered for offline use
 - **Wireless Communications | Aug 2015 - Dec 2016**
 - Worked as member of two-person team on Vertically Integrated Project for Unmanned Aerial Vehicle research
 - Established secure communication between ground control station and flight control system using an XBEE 802.15.4 wireless module
 - Developed testbenches to analyze the performance of XBEE at different baud rates, packet sizes with encryption enabled
 - Presented and published associated research at AIAA 2017 Sci-Tech Exhibition in Grapevine, Texas
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Publications

1. Leccadito, M., Yemaneberhane, B., **Nimo, C.**, Bakker, T., Klenke, R., (2017). *Investigating Encrypted IEEE 802.15.4 and DigiMesh Communications for Small Unmanned Systems*, AIAA Information Systems-AIAA Infotech @ Aerospace, AIAA SciTech Forum.
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Professional Experience

Intel Corporation | Graduate Intern | May 2021 - August 2021

- Used machine learning techniques to make predictions to determine optimal configurations for a given simulation model system.
- Worked with the Mathematical Modeling team in the Data Platforms group to improve their data processing and visualization tools that is used to gain insights on vast amounts of data to render smart solutions for Intel Customers.

Dell | Software Engineer II | | June 2017 – May 2021

- **Microservices (backend development)**
 - Worked to migrate an existing service as a reactive microservice, built as a non-blocking and asynchronous solution resulting in huge performance enhancements in several areas including memory footprint, CPU load, thread utilization, data loss, and responsiveness.
- **Department of Defense (backend development)**
 - Developed a solution in response to a request by the Department of the Defense (DOD) for account management in the application. As a result, it provided improvements to user experience in for session management, account configuration, session sync between multiple connected consoles in a network
- **OpenManage Enterprise Modular Version 1.0**
 - Designed and developed several server-side RESTful API's using the Spring Framework in Java for factory settings on the management console.
 - Improved security by implementing secure authentication mechanism for users on for account sessions in the management console using python and RESTful APIs in Java.
 - Configured and implemented solutions to bolster the security of user sessions in the server-side development environment
 - Worked to solidify Field Service Debug Workflow for Dell-RACADM in OpenManage Enterprise Modular

Dell | Embedded Firmware Engineer Intern | May 2016 – August 2016

- **Internship**
 - Worked as a firmware engineer on next generation of Dell PowerEdge servers
 - Created a binary, packaged in firmware, that retrieves critical server data (system info, sensor data, etc.) from iDRAC and writes it to a VGA Display
 - Binary allows IT administrators and server personnel convenient access to system information and reports actions performed on server

Selected Projects

Robot Learning Final Project | The University of Texas at Austin | Aug 2021 – Dec 2021

- **Multimodal End to End Autonomous Driving via Conditional Imitation Learning**
 - Explored the impact of adding and removing modalities with respect to early multimodal fusion paradigms in the context of conditional imitation learning
 - the goal was to find the impact of optical flow as a modality in relation to other modalities such as RGB images and lidar.
 - Our model consists of two parts, a feature encoder, and an autoregressive waypoint predictor
 - We utilize the CARLA simulator which provides multiple modalities, and we then create our own optical flow images by using a lightweight version of the current state-of-the-art deep learning approach for optical flow

Advanced Computer Vision Final Project | The University of Texas at Austin | Aug 2021 – Dec 2021

- **Real-Time Optical Flow Estimation**
 - Built upon the previous work RAFT which is the current state-of-the-art approach for optical flow estimation
 - In this work, by applying techniques such as pruning, quantization, and distillation we aim to improve the inference time of RAFT.
 - Our experiments show that our model achieves similar performance while also being faster and light weight in comparison to original RAFT architecture.

Senior Capstone Project | Virginia Commonwealth University | Sep 2016 – May 2017

- **Brake Performance Data Acquisition System**

- Contributed to design of a data acquisition system to monitor the brake performance of a vehicle incorporating real-time brake-line pressure and temperature reading capabilities; The system is integrated with a GPS system to track speed, acceleration, and deceleration, as well as provide maps of routes taken
- Data is viewed overlaying on a map, implemented with a Google Maps web page applet, to show where events occurred
- Device also displays real-time information at runtime regarding brake temperature and pressure, along with device status messages for error reporting and brake squeal detection, on a small LCD display.
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Microcomputer Systems Final Project | Virginia Commonwealth University | Dec 2015

- **Autonomous Robot Competition**

- Competed in competition for Microcomputer System's course covering microprocessor instruction sets and architectures, computer organization, assembly language, and the function of memory and I/O subsystems. Placed 2nd out of 15 groups in the maze navigation race.
- Designed and developed a robot to complete the following tasks: maze navigation, line following, and drawing an Image, in C language
- Created an android app that sends characters via Bluetooth to control the robot. Robot was programmed using ARM Cortex-M3 microcontroller

Extracurricular Activities

Association of Black Computer Scientists at UT | Mentor | September 2021

The organization works to build and empower members of Texas Computer Science and the broader Black community to pursue technology related education and careers. We hope to inspire and equip the next diverse generation of thoughtful technologists!

National Society of Black Engineers | Senator | August 2016 – May 2017

The National Society of Black Engineers is an organization whose sole mission is to increase the number of culturally responsible Black engineers who excel academically, succeed professionally, and positively impact the community.

Honors and Awards

2021 The National GEM Consortium Full Fellowship Recipient – M.S.
2021 Intel Corporate Scholar

Conferences

2021 The National GEM Consortium Annual Board Meeting and Conference – Adobe Scholar
2020 AfroTech Conference Attendee
2017 AIAA SciTech Exhibit Presenter
2017 NSBE National Convention Attendee
2016 NSBE National Convention Attendee

Skills & Relevant Coursework

Languages:

- Java, Python, C++/C, Swift, JavaScript

Frameworks & Libraries:

- Pytorch, AWS, Git, Anaconda, Google Colab, Jupyter, Spring Framework, Xcode, Matlab

Computer Science

- Robot Learning, Advanced Computer Vision, Autonomous Robots

Electrical and Computer Engineering

- Microelectronics, Signals and Systems I and II, Microcomputer Systems, Algorithm Design and Principles, Operating Systems, Computer Organization, Circuits, Discrete Math

Websites

Portfolio - <https://charlesnimo.me/>

LinkedIn - <https://www.linkedin.com/in/charlesnimo/>