Donnie Stewart

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EDUCATION

University of California at Santa Cruz — **10, 2020 – 06, 2022**
M.S. in Computer Science - ***GPA 3.96*** — *Santa Cruz, CA*

University of California at Santa Cruz — **10, 2017 – 06, 2020**
B.S. in Computer Science — *Santa Cruz, CA*

EXPERIENCE

Graduate Student Researcher — **2022 – Present**
AVIS Lab, UC Santa Cruz — *Santa Cruz, California*

- Two pending publications and an award-winning presentation.
- Research focused on Computer Vision solutions to identifying rip currents for beach goer safety.
- Machine Learning design from scratch: field data collection and labeling, model design, training, and testing.
- Trained models using Google Cloud Platform: GPU Virtual Machine instances based on TensorFlow images.

Teaching Assistant — **2021 – Present**
UC Santa Cruz — *Santa Cruz, California*

- Assisted in teaching: Programming Abstractions in Python (4 Semesters) and Systems Analysis and Design.
- Handled course logistics and held over 150 hours of lessons.

Software Engineering Intern — **2020**
Hyperledger Fabric — *Remote*

- Developed the fundamentals of working on a large Open-source project.
- Learned practical applications of Blockchain Technology.
- Applied popular industry technologies including Docker, Node.js, Go, and MongoDB to develop Blockchain applications.

Student IT Consultant — **2019 – 2020**
Faculty Instructional Technology Center, UC Santa Cruz — *Santa Cruz, California*

- Worked with IT department to resolve web-based and multimedia issues.
- Provided in-person, telephone, and online support to faculty for a broad range of instructional technologies and tools.

RESEARCH & PROJECTS

Realtime ML-Assisted Data Collection using Drones | **New Research** — **2022**

- This research is part of a pending publication under the same title. For additional technical details and visuals, follow the project link above.
- Developed a system for realtime visual data collection with drones by coordinating lightweight ML models and drone controls.
- Benefits operators by facilitating efficient and economical data collection. Additionally, ML assisted identification helps drone operators who are not experts in the subject domain of the data.

Secure Message System — **2021**

- Developed a cryptographically-secure messaging system from scratch. Sent messages are signed, hashed, and encrypted. Received messages are decrypted and verified.
- Cryptographic techniques utilized include SHA3-512 Hashing, P-521 Elliptic Curve Cryptography, Key Ratcheting, Simon Block Cipher, and Block Cipher Mode of Operation.
- Demonstrated a message tampering attack that the system is resilient against.

Sign Language Detector — **2021**

- Created a classifier for detecting sign language hand gestures.
- Processed image corpus using a Convolutional Neural Network (CNN) model from scratch then compared to a CNN leveraging transfer learning.
- Both trained models achieved a greater than 99% validation accuracy on detecting the correct sign language letters 'A-Z'.

COURSEWORK

- Advanced Machine Learning
- Analysis of Algorithms
- Applied Cryptography
- Computer Architecture
- Computer Networks
- Computer Systems & Assembly Language
- Cryptography
- Databases
- Distributed Systems
- Foundations of Deep Learning
- Machine Learning & Ethics
- Operating Systems
- Software Engineering
- Thesis Research
- Web Applications