Jeremiah Duncan

jeremiah.duncan97@gmail.com
423.914.9578

2411 Sutters Mill Lane
Knoxville, TN 37909
LinkedIn, GitHub: MikeynJerry
Languages: Python, JavaScript

EDUCATION

Electrical Engineering and Computer Science, **Aug. 2019 - Present**
University of Tennessee, Knoxville
Pursuing a Masters in the area of Computer Vision, expected graduation 12/2021 – 4.0 GPA Knoxville, TN

Electrical Engineering and Computer Science, **Aug. 2016 - May 2019**
University of Tennessee, Knoxville
Bachelors in Computer Science – 4.0 GPA - Summa Cum Laude Knoxville, TN

- **Senior Design Project - VocaCoord**
  - Designed a website and mobile app from scratch that helps hearing and learning impaired students
  - Teachers select words from lesson plans that students have difficulties with and VocaCoord uses real-time Speech-To-Text to monitor when those words are mentioned, sending kid-friendly pictures and definitions to students' devices that they can interact with during lessons
  - Used a React and JavaScript frontend and a Firebase backend to scale the app to hundreds of users

RESEARCH EXPERIENCE

UVULab - Computer Vision and Natural Language Processing, UTK **Aug. 2019 – Present**
Graduate Research Assistant Knoxville, TN

- Developed an adversarial attack on image classifiers that facilitates creating adversarial images that keep their adversariality through resizing filters used in common image classification pipelines which resulted in a publication, "One Size Does Not Fit All: Transferring Adversarial Attacks Across Sizes"
- Investigating potential adversarial attacks on text classifiers using sentence rewriting and paraphrasing methods to create adversarial text examples that keep overall sentence meaning while tricking LSTMs and Transformers

Seelab - Data Visualization, University of Tennessee **Jan. 2018 – Aug. 2019**
Undergraduate Research Assistant Knoxville, TN

- Helped develop and implement a way to save and share interactive, computation-heavy visualizations across the web using Electron, Python, and JavaScript which resulted in a publication, "Dataless Sharing of Interactive Visualization"
- Helped develop and implement a way to extend web visualizations to the real-world in Augmented Reality space using JavaScript, THREE.js, and THREE.AR.js which resulted in a publication, "Alpaca: AR Graphics Extensions for Web Applications"
- Designed a web visualization of Great Smoky Mountains National Park in collaboration with the National Park Service that tracks the location of different wildlife species overlaid on a map of the park

WORK EXPERIENCE

Machine Learning Engineer Intern, ByteDance **May. 2021 – Aug. 2021**

- Integrated new distributed training backend into an ML framework to increase model training speed up to 2x at scale
- Worked with internal customers to convert their codebases to work with our ML framework to increase researcher productivity

Electrical Engineering and Computer Science, **Aug. 2019 – Dec. 2019**

University of Tennessee, Knoxville

Graduate Teaching Assistant Knoxville, TN

- Planned, developed, and taught custom lesson plans for the lab portion of CS 102
- Tutored students in C++ and Data Structures

PUBLICATIONS

- Jeremiah Duncan and Amir Sadovnik, “One Size Does Not Fit All: Transferring Adversarial Attacks Across Sizes”, CVPR Workshop on Adversarial Machine Learning in Real-World Computer Vision Systems and Online Challenges, 2021
- Mohammad Raji, Jeremiah Duncan, Tanner Hobson, and Jian Huang, "Dataless Sharing of Interactive Visualization", IEEE Transactions on Visualization and Computer Graphics, 2020
- Tanner Hobson, Jeremiah Duncan, Mohammad Raji, Aidong Lu, and Jian Huang, "Alpaca: AR Graphics Extensions for Web Applications", Proc. of IEEE VR, March 2020, Atlanta, GA

CLASSES TAKEN

- Natural Language Processing
- Reinforcement Learning
- Deep Learning
- Machine Learning
- Digital Image Processing
- Linear Algebra I
- Probability and Random Variables
- Calculus I, II, & III
- Software Engineering

SKILLS

Programming / Scripting Languages:

- Python (Advanced)
- Go (Intermediate)
- Java (Basic)
- JavaScript (Advanced)
- C++ (Intermediate)

Frameworks / Tools:

- Tensorflow / Keras (Advanced)
- PyTorch (Advanced)
- React (Advanced)

Other Skills:

- Data Mining and Analysis
  - NumPy
  - scikit-learn
  - pandas
- Data Visualization
  - Matplotlib
  - D3.js
- Deep Learning
  - Natural Language Processing
  - Computer Vision
- Model Deployment
  - VM deployment on GCP / AWS / Azure
  - Docker
  - REST APIs