



EDUCATION

M.S. Computer Science

University of Illinois at Urbana-Champaign, Thesis Topic: Computer Vision & Deep Learning

May 2022

GPA: 4.00/4.00

B.S. Computer Science, Minor in Statistics

University of Illinois at Urbana-Champaign

May 2021

GPA: 3.96/4.00

Coursework Computational Photography, Computer Vision, Machine & Deep Learning

Awards \$5000 TechnipFMC & \$3000 TBP Hayward Scholarships, 2nd place at PygHacks, 2nd place at Clorox competition

TECHNICAL SKILLS

Languages Python, C++, C, Java, Javascript, Typescript, SQL, Bash

Frameworks PyTorch, OpenCV, TensorFlow, Linux, Git

PROFESSIONAL EXPERIENCE

NVIDIA | Software Engineering Intern, TensorRT

Santa Clara, CA | May 2021 – Aug 2021

- Introduced a software-based kernel timing heuristic (DLSim) for **neural network optimization**
- Bridged **C++** TensorRT and **Python** DLSim by implementing a server-client interface handling 10s of queries/s with convolutional layer parameter translation
- Compared 5 networks (**ResNet-50**, **MobileNet**, **Inception-V4**, etc), across 3 batch sizes and FP16, INT8 precision, meeting the <10% throughout reduction goal

Amazon | Software Development Engineer Intern

Seattle, WA | May 2020 – Aug 2020

- Reduced aggregate **Javascript** asset build time by 18.5% and decreased memory usage by 11%
- Analyzed code syntax trees for unfavorable behavior, decreasing final asset size by 5%
- Designed a variant generation algorithm an **order of magnitude faster** for server built variants and client responsive variants

Distributed Autonomous Systems Laboratory

Jan 2020 – May 2020

Undergraduate Research Assistant | Advisors: Dr. Girish Chowdhary, Dr. Saurabh Gupta

Urbana, IL

- Investigated vision-based robot heading estimation with a **self-supervised network** on **PyTorch** achieving 2 degrees error
- Devised a **supervised network** for autonomously calculate pose and drive a robot with distance to intervention of 30 meters
- Augmented video data with **homographic transformations** to simulate robot variance and increase dataset coverage

EarthSense | Computer Vision Research Intern | Advisor: Dr. Girsh Chowdhary

Champaign, IL | Sep 2019 – Dec 2019

- Ascertained intrinsic camera matrices of Terrasentia robot cameras
- Achieved 92% accuracy for corn ear height estimation from video by fusing a **neural network** with **single view metrology**

Northrop Grumman | Software Engineering Intern

Rolling Meadows, IL | May 2019 – Aug 2019

- Developed a C# application to configure and test missile warning algorithms and pulled in project schedule by 2 months

EarthSense | Computer Vision Intern

Champaign, IL | Sep 2018 – May 2019

- Trained a **convolutional neural network** with **TensorFlow** on a biased dataset to classify lodging of wheat with 80% accuracy
- Deployed a **TensorFlow ML** model to detect and count plant stems with 96% accuracy

Swarm Robotix | Software Engineering Intern

Naperville, IL | May 2018 – Aug 2018

- Collaborated with 2 people to create vision algorithms with **OpenCV** to detect shipping container corner castings

PROJECT HIGHLIGHTS

HackIllinois Stock Analysis

- A python package discovering sentiment about a company from its tweets using NLTK and correlating it with stock price
- Linear**, **ridge regression**, and a **convolutional neural network** are used for prediction and compared against each other

CU-Recycle

- Devised an Android application to report an item's recyclability status in the Urbana-Champaign area, **winning 2nd** at PygHacks
- Trained a convolutional neural network for **object recognition** with **Keras** to overcome lighting and object variance

LEADERSHIP

CS 461: Computer Security | Course Assistant

Jan 2021 – May 2021

CS 374: Algorithms | Course Assistant

Aug 2020 – Dec 2020

DGS Student Council | Class Representative

Aug 2019 – May 2021

Engineering Freshmen Council | IT Chair

Aug 2017 – May 2018

PUBLICATIONS

Learned Visual Navigation for Under-Canopy Agricultural Robots | Robotics: Science and Systems

2021

Arun Sivakumar, **Sahil Modi**, Mateus Gasparino, Che Ellis, Andres Velasquez, Girish Chowdhary, Saurabh Gupta