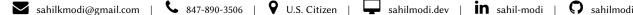
# SAHIL MODI





## **EDUCATION**

## M.S. Computer Science

May 2022 GPA: 4.00/4.00

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

#### **B.S. Computer Science, Minor in Statistics**

May 2021

University of Illinois at Urbana-Champaign

GPA: 3.96/4.00

Coursework Computational Photography, Computer Vision, Machine & Deep Learning

## TECHNICAL SKILLS

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

Frameworks PyTorch, OpenCV, TensorFlow, Linux, Git

## PROFESSIONAL EXPERIENCE

**NVIDIA** | *Inference Software Engineer, TensorRT* 

Santa Clara, CA | Aug 2022 - Present

- Trained an RL system to generate performant CUDA kernel, replacing engineering time with machine time
- Prototyped LLM weight and KV-cache offloading to enable large-language-model inference on a single GPU
- Reduced system memory usage by over 50% for generative transformer models (GPT3, BART)

**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

# PROJECT HIGHLIGHTS

# **HackIllinois Stock Analysis CU-Recycle**

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

### **PUBLICATIONS**

Tracking objects and distinguishing their states by watching egocentric videos | Thesis Sahil Modi, Saurabh Gupta

2022

Human Hands as Probes for Interactive Object Understanding | CVPR Mohit Goyal, Sahil Modi, Rishabh Goyal, Saurabh Gupta

2021

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