

# Charitarth Chugh

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## EDUCATION

### UCONN MATHEMATICS-STATISTICS

Minor: Computer Science

Expected Graduation: May 2025

#### Relevant Coursework

Machine Learning • Data Science

Data Structures & Algorithms

Probability • Systems Programming

Applied Linear Regression

## SKILLS

### PROGRAMMING

Python:

NumPy • Pandas • Polars • Matplotlib

FastAPI • SQLAlchemy • Flask

Frontend:

Flutter • React

### MACHINE LEARNING

Tools:

PyTorch • Transformers • scikit-learn

XGBoost • Alumentations

### DEVELOPMENT

GitHub Actions • Linux • Bash •

Containers (Docker, Podman)

## ACTIVITIES

### UCONN AI CLUB

PRESIDENT: 2023-2025

• AI Club does workshops, showcases, and projects around transformers and deep learning.

• Co-ordinated and lead weekly meetings

• Spearheaded the Special Projects Group to do open-source contributions to LiquidPrep, an organization helping farmers

## LINKS

GitHub:// [charitarthchugh](#)

LinkedIn:// [charitarth](#)

Twitter:// [@charitarthchugh](#)

Kaggle:// [charitarth](#)

Medium:// [@charitarth.chugh](#)

## WORK EXPERIENCE

### PROTECTION SHIELD | MLE, FREELANCE

September 2023 - May 2024

- Protection Shield is a startup working on intelligent network firewall systems
- Working on their AI team to build federated learning models to detect network attacks.
- Built baseline models on publically available datasets.

## PROJECTS

### ENERGY JUSTICE MAPPING TOOL | DATA SCIENCE

July - August 2024

- The Energy Justice Mapping Tool is a solution for policymakers and stakeholders to improve areas which lack equitable access to energy infrastructure.
- Part of a multidisciplinary team that whose grant proposal was selected for the Clean Energy & Sustainability Innovation Program 2024
- Responsible for the integration and real-time analysis of geospatial data from 5+ data sources using GeoPandas

### SPARSEINST | COMPUTER VISION

September-December 2024

- Replicating the results of Sparse Instance Activation for Real-Time Instance Segmentation by Cheng et al. (2022), published at CVPR 2022
- Implementing SparseInst on ResNet-50 backbone
- Utilizing PyTorch Lightning, FiftyOne, WandB and Optuna for model training, testing, and evaluation.
- Assessing model performance by comparing segmentation accuracy and speed metrics, such as Average Precision and FPS, against the original results.

### BOOKIE | FULL STACK

May 2022-July 2022

- Created a cross-platform bookmark manager using FastAPI, SQLite & Flutter
- Managed a 5-person cross-functional team (frontend, backend, database)
- Setup **GitHub Actions** for code cleanup
- Developed CLI interface, API, daemon and facilitated Python packaging
- Rewrote database for faster writes and updates, using recursive SQL database structure.

## RESEARCH

### UNDERGRADUATE RESEARCHER November 2022 - Present

- Developed and optimized machine learning models for embedded devices for object detection tasks under the guidance of **Dr. Caiwen Ding**
- Working under Dr. Derek Aguiar to create tabular models that predict outcomes in legal cases.

## AWARDS

### HACKHARVARD 2023 | EFFICIENCY BOOSTERS PRIZE

October 2023

- Created SnipStudy, a product that helps students extract information from long form video content, such as video lectures, more efficiently.

### HACKUMASS X | BEST USE OF TWILIO

### COINDESK X TRADEBLOCK CRYPTO HACKATHON | 1ST PLACE