

# ZAHIN M. ZAMAN

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## PROJECTS

### pupil

HackDuke – Wolfram Award



- **OpenCV** application that detects pupil movement and develops eye-tracking communication for Cerebral palsy patients
- Applied **Haar Cascade classifiers**, **blob detection** and **morphological transforms** to process real-time footage
- Utilized **multi-state sigmoid activation function** to calibrate pupil coordinates

### cram.ai

WinterHacklympics – Best Use of Google Cloud



- Utilized **YouTube Transcript API** to extract lecture video transcript and applied pre-trained **RNN** to add punctuation
- Incorporated **NLTK** and **Google Cloud Language** to summarize lecture videos
- Generated flashcards with questions and answers in a user-friendly frontend served by a **Flask** backend hosted on **Heroku**

### Hachiko's Journal

HackRU – 1<sup>st</sup> Place Health Hack



- AI-based digital therapeutic journal writing application for mental health patients with interactive virtual assistant
- Performed **sentiment analysis** using **Google Cloud Language** to provide real-time feedback and compliments
- Developed desktop application with interactive virtual assistant using **PyQt5**

### EduSource

HackTheU – Best Use of Google Cloud

Hackrithmitic – Best Use of Google Cloud



- Web application for enriched remote education, crowdsourcing course materials and scientific equation recognition
- Employed **Google Cloud Vision** to implement scientific equation recognition from handwriting
- Built **Flask** app with **HTML**, **CSS**, and **Bootstrap**, and managed database **ORMs** in **Flask SQLAlchemy** and **SQLite3**

## TECHNICAL SKILLS

**Languages:** Python, C++, JavaScript, HTML, CSS, Bash

**Frameworks:** Django, Flask, React.js, React Native, MySQL, PostgreSQL, TensorFlow, Keras, OpenCV, pandas, Matplotlib, PyQt5

**Tools/Services:** Docker, Google Cloud, Heroku, Firebase

## EXPERIENCE

### Full-Stack Developer

Nokia | May 2021 – August 2021

- Developed & managed user authentication, community articles page and voucher redemption system for [Nokia Network Developer Portal](#) on **Django** server with an **Azure MySQL** database
- Secured backend using **Django REST framework** API permissions, cross site scripting protection and honeypot setups
- Improved unit test coverage by **10%** and configured **Docker** image for **Gitlab CI** automation testing of Django forms and API endpoints
- Designed responsive frontend in **Jinja2** using **jQuery** and **Bootstrap**

### Open-Source Software Developer

codePrentice | Sept 2020 – Present

- Expanded Python multiparty-computation library, **MP-SPDZ**, to support **CNNs** including SqueezeNet, ResNet & DenseNet
- Composed [comprehensive tutorial](#) based on Matrix Profile research paper for Python time series analysis library, **STUMPY**
- Worked on optimizing multi-threaded Matrix Profile computation algorithm using **NumPy** and **Numba** to avoid cache misses

### Software Developer

Wind River Systems | Sept 2020 – Dec 2020

- Devised thread-safe functions in **C** and inline **Assembly** to fix multi-threading and memory-based defects for VxWorks RTOS
- Developed interactive application in **PyQt5** that assists in writing git commit messages and verifies status of Jira issues and code reviews
- Formulated git hook script to block commits on restricted files

### Display Verification Engineer

Qualcomm | Jan 2020 – May 2020

- Attained **20%** increase in functional coverages by engineering **SystemVerilog** assertions to verify processor design
- Automated formal verification using **Perl** scripting to extract design hierarchy and formulate assertions

### Embedded Software Developer

Imagine Communications | May 2019 – Aug 2019

- Reconstructed **C/C++** code on Linux environment to fix firmware bugs
- Extracted IP routing data from data structures and developed troubleshooting functions and mapping tables

## EDUCATION

### University of Waterloo

B.A.Sc. in Electrical Engineering, 3<sup>rd</sup> Year | Sept 2018 – May 2023

- **Term Dean's Honour List**, for outstanding academic performance
- **Artificial Intelligence Degree Specialization**