

David Novikov

<https://davidnovikov.github.io/DavidNovikov/>
dn9678@gmail.com, 2435 Brian Dr. Beachwood OH 44122, 440-533-5480

EDUCATION

The Ohio State University

B.S. Computer Science & Engineering Honors
Minors: Russian Language and Culture

Columbus, OH
Expected Graduation: May 2024
Cumulative GPA: 4.00

QUALIFICATIONS

Coursework: Machine Learning, Computer Vision, Neural Networks (in progress), Data Structures and Algorithms, Low Level Programming and Computer Organization, Operating Systems, Interactive Systems, Linear Algebra, Intro Databases Systems, Intro Computer Networking, Foundations of Higher Math, Statistics for Engineers

Programming/Software: Python (pandas, numpy, Pytorch, Tensorflow, OpenCV, MediaPipe), C, C++, Git, C#, Dart/Flutter, lua, x86-64 ASM, STM8 ASM, Linux, Make, gdb, Java, MATLAB, SolidWorks

Languages: Russian (fluent), Hebrew (proficient)

RESEARCH EXPERIENCE

Car Detection from Drones – Honors Undergraduate Research Thesis – Dr. Alper Yilmaz March 2022 - Present

- Determine geo-location of cars from drone footage using novel projection method
- Annotate dataset for car detection tasks from drone footage
- Train yolov5 model to detect cars with sliced window inference

Scaling Drone Detection with Diffusion based Synthetic Data – Dr. Mubarak Shah May – Sep 2022, Feb – Mar 2023

- Generated synthetic data images with stable-diffusion model
- Experimented with 35+ synthetic data generation configurations
- Wrote multithreaded scripts which automated all components of training and testing computer vision models
- Established new State-Of-The-Art by 0.05 mAP@50 and 0.06 mAP@50 while improving inference speed by 176.19% and 140.74% for the FL and NPS drone datasets respectively

Stroke Detection using Pose Estimation – Dr. Alper Yilmaz

May 2021 – March 2022

- Developed stroke detection algorithms to determine stroke severity using body tracking and patient responses
- Lead switch to MediaPipe library to enable faster development and testing
- Determined stroke severity using facial analysis

WORK EXPERIENCE

General Electric Appliances

Software Engineering Co-op, full-time, Louisville, KY

May – Aug 2021

- Completed 2 initial patent disclosures to diagnose dishwasher faults by aggregating data from multiple sensors
- Automated materials tracking tasks in factory and reduced time to track materials from 1 hour to 5 seconds
- Provided support for power electronics by writing drivers for replacement microchips
- Expanded advanced water level monitoring system for dishwashers to address fill and drain malfunctions

General Electric Appliances

Software Engineering Co-op, full-time, remote

Aug - Dec 2020

- Developed user interface and backend for Wall Oven LCD screen using Dart/Flutter
- Generated tests to monitor code test coverage using lcov for line coverage and automated UI tests for functionality
- Supported development of continuous integration to maintain 60 frames per second after modification to code base

PROJECT EXPERIENCE

De-distracted Driving

Oct 2022

- Sourced and automated the annotation of 13,037 images to train computer vision model to detect distracted driving
- Integrated python, Arduino, and webcam to detect distracted drivers and alert them using lights and buzzers in real time
- Placed 1st overall of 275 teams and placed 2nd of 25 in the Honda Contest at the Hack OH/O Hackathon

LEADERSHIP EXPERIENCE

OSU Artificial Intelligence Club

Nov 2022 - Present

- Presented on YOLO architecture and effective computer vision model training scheme

OSU Autodrive

Oct 2022 - Present

- Develop effective data transfer between vision models and control systems for autonomous vehicle navigation

OSU Society of Women Engineers - HeforSWE Affinity Group Chair

Nov 2020 - Present

- Pilot program lead for male affinity group involvement in SWE

OSU Unicycle Club – Vice President

Aug 2019 - Present

- Encourage and promote unicycling within The Ohio State University community