David Novikov

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EDUCATION

Weizmann Institute of Science, Rehovot, IL
MSc in Mathematics and Computer Science **Oct 2023 - Present**

- Research Area: Computer Vision, with thesis advisor Professor Mark Sheinin
- GPA: 91.9/100

The Ohio State University, Columbus, USA
BS in Computer Science and Engineering **Aug 2019 - Aug 2023**

- Summa Cum Laude
- Honors Research Distinction: Thesis on Vehicle Geolocalization from Drone Imagery with Professor Alper Yilmaz
- GPA: 4.0/4.0
- Minor: Russian Language and Culture

Cleveland State University, Cleveland, USA
Duel enrollment during high school - Physics **Jan 2018 - May 2019**

- GPA: 4.0/4.0

RESEARCH EXPERIENCE

Vehicle Geolocalization from Drone Imagery
David Novikov, Paul Sotirelis, and Alper Yilmaz

- ISPRS TC II Mid-term Symposium 2024
- Developed a novel projection method to determine car geo-location from drone footage, robust to GPS-denied environments
- Applied GIS-based filtering of image features
- Funded by U.S. Air Force Research Lab: Grant AWD-111867

Dominant Twin Peaks: A Novel Conjecture for the Pathophysiologic Basis of Tremor Frequency and Fluctuation Time in Parkinson's Disease
Furrukh Khan, David Novikov, Brian Dalm, Jessie Xiaoxi, Oliver Flouty, and Evan Thomas

- Front. Neurosci., 18 June 2025, Sec. Neurodegeneration
- Expedited research by proposing a computer vision solution for a task requiring hardware development, saving 1-1.5 years
- Contributed to a patent application based on the findings

Intelligent Stroboscopic Image Encoding (ongoing)
David Novikov, Tali Dekel, Mark Sheinin

- Developed camera and light prototype to capture fast stroboscopic images as well as reconstruction algorithms to increase frame rates for global shutter cameras by a factor of 10

Scaling up Drone Detection using Synthetic Data (unpublished)
David Novikov, Rohit Gupta, Mubarak Shah

- Generated synthetic data with stable-diffusion model
- Wrote multithreaded scripts that automated all components of training and testing computer vision models
- Established higher State-Of-The-Art result 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

SKILLS

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 (native), Hebrew (proficient)

WORK EXPERIENCE

Weizmann Institute of Science
Computational Imaging Teaching Assistant, *Rehovot, IL* **Nov 2024 - April 2025**

- Held office hours to review material and graded homeworks for the first iteration of the computational imaging course
- Focus was on imaging processing algorithms for basic and advanced camera models

Ubihere
Software Engineering Internship, *Columbus, USA* **June - Sept 2023**

- Developed Raspberry Pi-based system for object GPS positioning and tracking
- Automated data collection and filtering to streamline user workflow

General Electric Appliances
Software Engineering Co-op, *Louisville, USA* **May – Aug 2021**

- Completed 2 initial patent disclosures to diagnose dishwasher faults
- Improved water level monitoring systems
- Developed device drivers during microchip shortage to transition to new embedded microchips
- Automated materials tracking, reducing time from 1 hour to 5 seconds

General Electric Appliances
Software Engineering Co-op, *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

Cleveland State University
Physics Teaching Assistant, *Cleveland, USA* **Jan - May 2019**

- Led lab portion of Honors Introduction to Calculus-based Mechanics
- Lectured on and wrote tutorials for applying statistical analysis to lab results to determine experimental error thresholds
- Wrote and conducted new physics labs for science teachers in Cleveland schools

COMPETITIONS

OSU Hackathon 2023 – Uncountable
1st place **Oct 2023**

- Sourced and automated the segmentation of 1,101 images for surgery props
- Integrated yolov8 segmentation model, camera, and tracking software to determine if a doctor has left items inside a patients body during a surgery

OSU Hackathon 2022 – De-distracted Driving
1st place **Oct 2022**

- Sourced and automated the annotation of 13,037 images for distracted driving to train computer vision model to detect distracted driving
- Integrated yolov5 model, Arduino, and webcam to detect distracted drivers and alert them using lights and buzzers in real-time

Ohio State Mathematical Contest in Modeling
1st place **Nov 2022**

- Modeled Urban Heat Island effect in Durham and how improvements in green spaces will decrease redux heat in the city
- Wrote report recommending where to target green space improvement and provided strategies to optimize the limited budget for redux heat reduction

LEADERSHIP AND INVOLVEMENT

The Ohio State Autodrive Challenge
Perception team **Sept 2022 - July 2023**
- Improved LiDAR and camera fusion algorithm for object detection and tracking
- Diagnosing and accelerating computationally demanding processes to ensure timely object detection and tracking

The Ohio State Unicycle Club
Vice President **Aug 2019 - April 2023**
- Encouraging and promoting unicycling within The Ohio State community

The Ohio State Hometown Ambassadors
Team Lead **Jan 2021**
- Organized presentation with engineering students for alma mater high school to promote and inform students on the opportunities available to them

Cleveland State Society of Physics Students
Fabulous Physics Question Writer **August 2018 - May 2019**
- Presented and discussed physics-style riddles to students interested in physics

HONORS AND ACCOLADES

Ohio State University
Undergraduate Research Scholarship, *Columbus, OH* **August 2022 - May 2023**
Ohio State University
Provost Scholarship, *Columbus, OH* **August 2019 - May 2023**
Cleveland State University
Undergraduate Teaching Assistant of the Year Award, *Cleveland, OH* **2018-2019**