Nazar Misyats

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Education

2025 – present **MASc Electrical and Computer Engineering**
University of British Columbia, Vancouver, Canada

2022 – 2025 **BSc and MSc (1st year) Computer Science**
École normale supérieure de Rennes, Bruz, France

2020 – 2022 **Classes préparatoires aux Grandes Écoles, MPSI – MP***
Lycée Carnot, Dijon, France

Experience

CERN Summer Student, *CERN*, Geneva, Switzerland Jun – Sept 2025
Tested feasibility of floating-point integration for particle transport simulation and proposed new geometry approximations to accelerate ATLAS EMEC simulations. – Report

Research Intern, *National Institute of Informatics*, Tokyo, Japan Feb – Jun 2025
Reconstruction of precipitating electron spectrum in auroras using neural implicit representations.

Research Student, *NTNU*, Trondheim, Norway Sept – Dec 2024
Development of a safe embedded drone controller based on control barrier functions.

Research Student, *University of British Columbia*, Vancouver, Canada May – Aug 2024
Development and simulation of new low-precision floating-point formats for deep learning.

Research Intern, *Inria/IRISIA*, Rennes, France Sept 2023 – May 2024
Design space exploration of approximate arithmetic operators for low-power embedded deep learning.

Research Intern, *Inria*, Valbonne, France May – Jul 2023
Extension and improvement of a real-time morphing operator for spatially varying BRDFs.

Publications

Misyats, Nazar, Marvin Harms, Morten Nissov, Martin Jacquet, and Kostas Alexis (2025). "Embedded Safe Reactive Navigation for Multirotors Systems using Control Barrier Functions". In: *2025 International Conference on Unmanned Aircraft Systems (ICUAS)*, pp. 697–704. DOI: 10.1109/ICUAS65942.2025.11007827.

Pun, Shing Wai, Bozhang Bao, Silviu-Ioan Filip, Guy Lemieux, John V. Kim, Nazar Misyats, Nirvik Pande, Victor Ravain, and Robert Sherrick (2025). "Range Extension with Supernormals for Mixed-Precision 8-bit DNN Training". In: *2025 IEEE 32nd Symposium on Computer Arithmetic (ARITH)*, pp. 1–4. DOI: 10.1109/ARITH64983.2025.00013.

Projects

Optimization tool for interplanetary trajectories with multiple gravity assists Website
A tool for automatic design of optimal trajectories with multiple gravity assists and deep space maneuvers. Now used by hundreds of players of the video game Kerbal Space Program.

Procedural shaders Shadertoy
Implementation of several rendering techniques using GLSL shaders, such as raymarching, pathtracing, and physically based rendering.

GPU-accelerated marching cubes GitHub
Implementation of a fast marching cubes algorithm using OpenGL compute shaders.

Robot neuroevolution GitHub
Training a neural network to drive a robot using a genetic algorithm.

Extracurriculars

UBC Rover 2025 – present
Embedded software and firmware development for a competition rover.

UBC Orbit 2025 – present
AOCS R&D for the ALEASAT CubeSat project of UBC's satellite design team.

Astronomy popularizing 2019 – present
Member of the *Société Astronomique de Bourgogne*, the largest french amateur astronomer association.

Competitive programming 2023
Top 10 finalist of the french national coding competition *Prologin*.

ESA Astro Pi competition 2020
Ran a custom data-collection experiment on the International Space Station to study cloud distribution.

Skills

Programming	C, C++, Python, CUDA, GLSL, JavaScript/TypeScript, C#, OCaml, PHP, SQL, HTML/CSS.
Frameworks	PyTorch, Unity, ROS, Node.js, .NET, OpenGL, Tensorflow, Keras.
Languages	French (native), English (fluent), Ukrainian (basics).