Nikolay Lyan, MSc

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Summary

I specialize in AI-based UAV control systems — designing reinforcement-learning policies and sensor-fusion pipelines (e.g., EKF with GNSS/IMU) for robust guidance, navigation, and decision-making.

Alongside control, I've worked on UAV airframe design, aerodynamic/thermal analyses (ANSYS, MATLAB), and full 3D CAD workflows (Fusion 360, CATIA, SolidWorks, Inventor).

My work experience includes UAV design and aerodynamic analysis, AI-based UAV control systems creation, and solving UAV communication and navigation problems. Onboard and ground software development for controlling UAV and collecting telemetry.

I program primarily in Python, C/C++, JavaScript, and PHP.

Experience

Freelance Aerospace Engineer

Upwork

2020 — now

- UAV development.
- Conduction of various physical simulations: static, dynamic, shock, aerodynamic, and thermodynamic loads calculation.
- Mathematical modeling.
- Analysis and automatic image processing software development.
- Applied and web programming.
- Development of 3D models of varying complexity.

Research Engineer

FSMVÜ ALUTEAM

2023 — 2024 (9 months)

- Production proposal preparation in the field of additive manufacturing.
- Production process planning, monitoring and controlling the production stages and carrying out documentation procedures.

Mechanical Engineer

İTÜ APİS ARGE TAKIMI

2019 – 2020 (1 year)

- Development of 3D models of the UAV fuselage.
- Aerodynamic analysis of the UAV models (using XFLR5 and ANSYS Fluent).
- Development of a program for direct import of airfoils from the https://airfoiltools.com/ website into Autodesk Fusion 360.

Student Intern

AALR «Institute of Space Technique and Technology»

Aug 2019 – Sep 2019 (1 month)

- Designing 3D models of coaxial filters at various frequencies.
- Electromagnetic analysis of coaxial filters (using ANSYS Electromagnetics Suite).

Student Intern

JSC «JV «Baiterek»

Baikonur Cosmodrome

Jul 2019 – Aug 2019 (1 month)

- Study of the functional systems of the operating Baikonur cosmodrome. Practical work was carried out on maintenance in the temperature control system of a space rocket, and the work of the assembly and test building was studied.
- The Soviet functional diagrams of the 17Г39 temperature control system were digitized.

Avionics Specialist

ITU Team HEDEF

2016 – 2018 (2 years)

- UAV onboard computer setup.
- Onboard software development:
  - Image acquisition script (from an onboard camera).
  - Command receiving and processing script (from UAV control station).
  - Image analysis program - autonomous localization of ground targets and determination of their geolocation.
- UAV control station software development:
  - Interface for interactive flight plan setup (including payload drop points setup) for UAVs with real-time tracking function.
  - Program for dynamic creation of comparative wing profiles.
- The general design of the logic of inter-program interaction between the UAV and the ground control station.
- Adjustment of the components of the communication system between the UAV and the ground control station.
- Setting up a secure data transmission channel between the UAV and the ground control station.

Education

Istanbul Technical University

Master's degree, Aeronautical and Astronautical Engineering

2022 – 2025

Istanbul Technical University

Bachelor's degree, Astronautical Engineering

2016 – 2022

Nişantaşı Nuri Akın Anadolu Lisesi

Student, Science

2014 – 2016

Academic publications

AI-Based Control of a Novel Airfoil-Shaped Quadrotor Hybrid Airship

Conference paper — SciTech 2024, January 2024

DOI: 10.2514/6.2024-0281

An Explorer Microsatellite for Assessing Viability of Genetically Manipulated Lichen on Apophis

Technical report — ResearchGate, Jul 2021

Link: ResearchGate

Licenses & Certificates

AIAA SCITECH FORUM ATTENDANCE CERTIFICATE — AIAA SciTech 2024, Orlando, FL

STUDIO CAMBRIDGE CERTIFICATE — Studio Cambridge

Honors & Awards

Siber Yıldız — USOM

Feb 2019

2nd place in Siber Yıldız 2019 competition as a team «ISTeknik»

Overall grand champions — IMechE UAS Challenge

Jun 2018

1st place in UAS Challenge 2018 as ITU Team «HEDEF»

Foreign languages

Russian • English

Skills

Reinforcement Learning • Python • C/C++ • MATLAB • Simulink • Linux • Mechanics • Aerodynamics • Thermodynamics • ANSYS Fluent • ANSYS Mechanical • Autodesk Fusion 360 • DS CATIA • DS SOLIDWORKS • Autodesk Inventor • PHP • Pentest • Arduino