Mark Zhidkov

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PROFILE

Final-year HKUST Electronic Engineering student applying to MSc programmes in robotics, aerospace and mechanical engineering. Builds electromechanical systems end to end: six custom UAVs (up to 15+ km range), three 3D printers (Voron 2.4, Voron 0.2, custom mini delta) and a motorised satellite-tracking mount.

EDUCATION

Hong Kong University of Science and Technology Hong Kong, 2023 – 2027 (Expected)
BEng in Electronic Engineering

Coursework: Electro-Robot Design, Computer Organization & Design, Signals & Systems, Electronic Circuits, Matrix Algebra, Probability & Random Processes; current: Deep Learning in Computer Vision, Digital Systems.

Moscow State Institute of International Relations (MGIMO) Moscow, 2022 – 2023
International Finance & Investment Management (one year before switching to engineering)

RESEARCH EXPERIENCE

Research Intern – Building-Integrated Photovoltaics Jun – Sep 2026
Department of Electronic and Computer Engineering, HKUST · Supervisor: Prof. Yen-Hung Lin

- Built a solar-yield model for six Hong Kong districts (~3,000 surfaces each) using ray-cast shading and hourly weather; estimated roof yield (~1,110 kWh/kWp) fell within the published local range.
- Ran Monte Carlo robustness checks (150 draws, 8 weather years) and grouped ~70,000 surface-hours to choose test conditions for the group's LED solar simulator.
- Simulated a 1.83 eV tandem top-cell bandgap giving ~11.5% more annual energy than a 1.68 eV baseline.

PROJECTS

Final Year Project – "STORM" L-band Weather-Satellite Ground Station Sep 2026 – May 2027
HKUST ECE · Supervisors: Prof. Ross Murch, Prof. Frankie Chiu · Team of 3, lead for the tracking mount

- Leading the autonomous azimuth/elevation tracking mount: CAD design of a portable two-axis pedestal, with stepper motors and worm-gear reduction sized from dish torque and wind-load estimates.
- Building it from CNC/laser-cut aluminium and 3D-printed ASA parts with position sensing, limit switches and homing; co-writing the motion control that follows TLE-based pass predictions to track LEO satellites.

UAV Platforms – FPV Quadcopters & Fixed-Wing ECE Makerspace representative · 2024 – Present

- Designed and built **6 custom airframes** (4 multirotor, 2 fixed-wing) end to end: Fusion 360 CAD, 3D-printed parts, hand-soldered power systems and full electronics integration.
- Reached **6+ km (quadcopter) and 15+ km (fixed-wing) range**; configured ArduPilot and Betaflight, PID tuning and autonomous waypoint navigation.
- Built an ML pipeline that turns blackbox flight logs (gyro and PID traces) into optimised PID gains.

3D Printers – Voron 2.4, Voron 0.2 and Custom Mini Delta Personal projects

- Built, wired and tuned **two Voron CoreXY printers (2.4 and 0.2)** running Klipper; both officially serialised by the Voron community.
- Designed and built a custom compact delta printer (final assembly Dec 2026): sourced the parts, wrote the Klipper config (delta kinematics, optical endstops, RP2040 board) and designed the extruder mount in CAD.

OTHER EXPERIENCE

Founder & Operator – Digital Media Platforms Self-employed · 2020 – Present

- Grew platforms to **190,000+ followers** and up to **USD 20,000/year** in revenue, running all operations alone.

SKILLS

UAV / Robotics: ArduPilot, Betaflight, flight controllers, telemetry, PID tuning, waypoint navigation
3D Printing & CAD: Klipper (CoreXY, delta), FDM in PETG, ABS and ASA, Fusion 360, Onshape
Electronics & Lab: Soldering, oscilloscope, multimeter, sensor integration, ESC/motor wiring, power systems
Programming & Data: Python, Java, basic C; ML for telemetry; Monte Carlo simulation; local LLMs and RAG
Languages: English (fluent), Russian (native), Spanish (basic)