Oleg Sautenkov, Skoltech
PhD Student / AI Agents Developer

ABOUT ME

A second year PhD student in the field of Robotics with wide work experience in LLM/VLM-agents, VLA-systems in Robotics, Flight Control, Flight Simulation, and Robotic Manipulation.

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Scholar: https://scholar.google.com/citations?hl=ru&user=phIRlIkAAAAJ
Telegram: @Sauten
Location: Hong Kong

EMPLOYMENT HISTORY, 4 YEARS

Dec 2023 – Dec 2024 **Team Lead Full Stack Robotics Engineer, Stealth Startup** Skolkovo, Russia

• Developed AI-powered global path planning algorithms and integrated LLMs into robotics software; led a team of 4 engineers and oversaw system-level testing and deployment.
• Ran and optimized deep learning models for matching and detection on edge devices with constrained VRAM; converted models to ONNX and applied techniques such as QLoRA, PEFT, LoRA, and SFT for efficient fine-tuning.
• Published research in top-tier conferences, contributing to advancements in real-world applications of LLMs and vision-language models in robotics.

Aug 2022 – **Present** **Research Assistant, Skolkovo Institute of Science and Technology** Skolkovo, Russia

• Designed and developed human-computer interaction (HCI) interfaces and scalable software systems for robotics and AI applications; contributed to technical documentation and cross-functional collaboration, while supporting knowledge transfer and mentoring activities.

Jun 2021 – Aug 2021 **Software Intern, Native Robotics** Skolkovo, Russia

• Successfully developed a computer vision application for detecting furniture boards in a manufacturing environment using OpenCV, laser line scanning, and Kinect Azure; enabled precise positioning and improved automation reliability on the production line.

Oct 2019 – Oct 2020 **Mechanical Engineer, SmirnovDesign** Moscow, Russia

• Designed and developed detailed 3D models and engineering plans for Unmanned Aerial Vehicles (UAVs), supporting prototyping and flight readiness.

• Engineered custom plastic and carbon fiber components for the light aviation industry, optimizing for weight, strength, and manufacturability.

EDUCATION

Jan 2025 – Present **AAE, The Hong Kong Polytechnic University, Invited Researcher** Hong Kong SAR
The Research Student Attachment Program, Incoming

Sep 2023 – Present **PhD, Engineering Systems, Skolkovo Institute of Science and Technology,** Moscow, Russia
Research in Visual-Language Models for Large Scale UAV Mission Generation

Sep 2019 – Aug 2022 **Systems Engineering, Skolkovo Institute of Science and Technology, GPA 4.8/5** Moscow, Russia
Relevant coursework: Robotics, Control Systems, Foundation of Software Engineering, High-Performance Python Lab, Virtual Reality and Haptics, Intro to Data Science, Computer Vision, Perception in Robotics.
120 ECTS credits.

Feb 2022 – Jun 2022 **CSAIL, Massachusetts Institute of Technology, Visiting Student** Cambridge, USA
Relevant work: Designing a novel type of motion capture system with invisible fiducial markers.

Sep 2015 – Jul 2019 **Aviation Systems and Construction, Moscow Aviation Institute, GPA 4.8/5** Moscow, Russia
Relevant coursework: Strength of materials, Aerodynamics, Flight Dynamics, CAD/CAM/CAE systems, advanced manufacturing.
207 ECTS credits

SCIENTIFIC PUBLICATIONS

• **Oleg Sautenkov,** Yasheerah Yaqoot, Muhammad Ahsan Mustafa, Faryal Batool, Jeffrin Sam, Artem Lykov, Chih-Yung Wen, Dzmitry Tsetserukou, "**UAV-CodeAgents:** Scalable UAV Mission Planning via Multi-Agent ReAct and Vision-Language Reasoning," submitted in Proc. IEEE Int. Conf. Systems, Man, and Cybernetics (SMC), Vienna, Austria, 5-8 Oct., 2025, submitted. (Scopus and WoS, H-index (SJR)=66)
Arxiv: https://arxiv.org/abs/2505.07236

• **O. Sautenkov,** Y. Yaqoot, A. Lykov, M. A. Mustafa, G. Tadevosyan, A. Akhmetkazy, M. Altamirano Cabrera, M. Martynov, S. Karaf, and D. Tsetserukou, "**UAV-VLA**: Vision-Language-Action System for Large Scale Aerial Mission Generation," in Proc. IEEE/ACM Int. Conf. on Human Robot Interaction (HRI 2025), Melbourne, Australia, March 4-6, 2025, pp. 1588-1592. (Core2023 A, Scopus, WoS, H-index (SJR)=70)
DOI: 10.5555/3721488.3721725
ACM Digital Library: https://dl.acm.org/doi/10.5555/3721488.3721725
Arxiv: https://arxiv.org/abs/2501.05014
GitHub: https://github.com/sautenich/uav-vla

• **O. Sautenkov**, A. Akhmetkazy, Y. Yaqoot, M. A. Mustafa, G. Tadevosyan, A. Lykov, and D. Tsetserukou, "**UAV-VLPA***: A Vision-Language-Path-Action System for Optimal Route Generation on a Large Scales," in Proc. IEEE Intelligent Vehicles Symposium (IV 2025), Cluj-Napoca, Romania, June 22-25, 2024, submitted. (premier conference of IEEE Intelligent Transportation Systems Society, Scopus, and WoS, H-index (SJR)=93)
Arxiv: https://arxiv.org/abs/2503.02454

• M. A. Mustafa, Y. Yaqoot, **O. Sautenkov**, and D. Tsetserukou, "**UAV-VLRR**: Vision-Language Informed NMPC for Rapid Response in UAV Search and Rescue," in Proc. IEEE Intelligent Vehicles Symposium (IV 2025), Cluj-Napoca, Romania, June 22-25, 2024, submitted. (premier conference of IEEE Intelligent Transportation Systems Society, Scopus, and WoS, H-index (SJR)=93)
Arxiv: https://arxiv.org/abs/2503.02465

• A. Lykov, V. Serpiva, M. H. Khan, **O. Sautenkov**, A. Myshlyaev, G. Tadevosyan, Y. Yaqoot, and D. Tsetserukou, "**CognitiveDrone**: A VLA Model and Evaluation Benchmark for Real-Time Cognitive Task Solving and Reasoning in UAVs"
Arxiv: http://arxiv.org/abs/2503.01378

• V. Serpiva, A. Lykov, A. Myshlyaev, M. H. Khan, A. A. Abdulkarim, **O. Sautenkov**, and D. Tsetserukou, "**RaceVLA**: VLA-based Racing Drone Navigation with Human-like Behaviour," in Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems, (IROS 2025), Hangzhou, China, 19-25 October, 2024, submitted. (No. 1 Conference in Intelligent Robotics and No. 2 in Robotics, Core2023 A, Scopus and WoS, H(SJR)=150)
Arxiv: http://arxiv.org/abs/2503.02572

• G. Tadevosyan, M. Osipenko, D. Aschu, A. Fedoseev, V. Serpiva, **O. Sautenkov**, S. Karaf, and D. Tsetserukou, "SafeSwarm: Decentralized Safe RL for the Swarm of Drones Landing in Dense Crowds," in Proc. IEEE/ACM Int. Conf. on Human Robot Interaction (HRI 2025), Melbourne, Australia, March 4-6, 2025, pp. 1665-1669. (Core2023 A, Scopus, WoS, H-index (SJR)=70)
DOI: 10.5555/3721488.3721741
ACM Digital Library: https://dl.acm.org/doi/10.5555/3721488.3721741
Arxiv: https://arxiv.org/abs/2501.07566

• **O. Sautenkov**, S. Asfaw, Y. Yaqoot, M. A. Mustafa, A. Fedoseev, D. Trinitatova, and D. Tsetserukou, "FlightAR: AR Flight Assistant with Multiple Video Streams and Object Detection aimed at Immersive Drone Control," in Proc. IEEE Int. Conf. on Robotics and Biomimetics (ROBIO 2024), Bangkok, Thailand, Dec. 10-14, 2024, pp. 614-619. (Scopus, WoS, H-index (SJR)=23)
DOI: 10.1109/ROBIO64047.2024.10907428
IEEE Xplore: https://ieeexplore.ieee.org/document/10907428
Arxiv: https://arxiv.org/abs/2410.16943
Github: https://github.com/Sautenich/FlightAR

• **O. Sautenkov**, M. Altamirano Cabrera, V. Rakhmatulin, D. Tsetserukou, "CobotTouch: AR-based Interface with Fingertip-worn Tactile Display for Immersive Operation/Control of Collaborative Robots", Published Paper in Asia Haptics 2022, Beijing, China, November, 12-14, 2022
DOI: https://doi.org/10.48550/arXiv.2211.01070
This paper was based on my master's thesis, in which I implemented Haptic Interfaces into the CobotAR system, reconfigured the Graphical User Interface, relocated the Camera Projector Module to a robot joint, and revamped the Computer Vision framework. Additionally, a subjective mental workload (MWL) assessment was performed.

• Rakhmatulin V., Grankin D., Konenkov M., Davidenko S., Trinitatova D., **Sautenkov O.**, Tsetserukou D. AirTouch: Towards Safe Human-Robot Interaction Using Air Pressure Feedback and IR Mocap System. In 2023 IEEE International Conference on Systems, Man, and Cybernetics (SMC) IEEE.
DOI: https://doi.org/10.48550/arXiv.2308.00096
I created the Motion Capture System based on my research during the internship at CSAIL MIT. This motion capture system was using the invisible markers for human eye, which allowed to maintain safe Human-Robot interaction during the task.

• M. Altamirano Cabrera, **O. Sautenkov**, J. Tirado, A. Fedoseev, P. Kopanev, H. Kajimoto, D. Tsetserukou, "DeepXPalm: Tilt and Position Rendering using Palm-worn Haptic Display and CNN-based Tactile Pattern Recognition," in Proc. IEEE Haptics Symposium (Haptics 2022), Santa Barbara, California, USA, March 21-24, 2022
DOI: https://doi.org/10.48550/arXiv.2204.03521
I constructed and assembled a haptic interface with an ESP32 controller and developed a dataset of haptic sensor readings based on interactions with a soft pipette. Furthermore, a subjective mental workload (MWL) assessment was conducted.

• Rakhmatulin, V., Cabrera, M. A., Hagos, F., **Sautenkov, O.**, Tirado, J., Uzhinsky, I., & Tsetserukou, D. (2021,October). CoboGuider: Haptic Potential Fields for Safe Human-Robot Interaction. In *2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC)* (pp. 2869-2874). **Best Paper Award.**
DOI: https://doi.org/10.48550/arXiv.2110.12940
I created and assembled the haptic interface based on ESP32 controller, and conducted the experiment on reaction time measurement on Haptic Potential Field.

• Nazarova, E., **Sautenkov, O.**, Cabrera, M. A., Tirado, J., Serpiva, V., Rakhmatulin, V., & Tsetserukou, D. (2021, October). CobotAR: Interaction with Robots using Omnidirectionally Projected Image and DNN-based Gesture Recognition. In 2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC) (pp. 2590-2595) IEEE.
DOI: https://doi.org/10.1109/SMC52423.2021.9658827
I created the system with Computer Vision framework with DNN, calculated the inverse kinematics for two robots depending on their mutual position, developed and conducted the experiments on subjective mental workload MWL) assessment.

• Miguel Altamirano Cabrera, Viktor Rakhmatulin, Aleksey Fedoseev, **Oleg Sautenkov**, Oussama Alyounes, Andrey Puchkov, Dzmitry Tsetserukou. OmniCharger: CNN-based Hand Gesture Interface to Operate an Electric Car Charging Robot through Teleconference. (2024, March) In 2024 ACM Transactions on Human-Robot Interaction.
DOI: https://doi.org/10.1145/365906

ACHIEVEMENTS

• **1st Place – Hackathon for Improving Life of People with Disabilities**
Developed a VLM/LLM-powered system enabling doctors to rapidly access patient disease history by scanning and extracting key information from medical documents using advanced vision-language models.

• **Best Project – AIRI Summer School on AI (2024)** | Led the winning team that developed "LLM-Agents for ArtifactsMMO," demonstrating advanced generative-AI agent capabilities.

• **Exceptional Contribution Award – Industrial Immersion Program (2024)** | Recognized as top mentor, guiding a cohort of 12 students through a two-month, industry-sponsored project to successful delivery.

• **1st Place – NVIDIA Hackathon, Skoltech (2020)** | Designed and architected an application that streamlines intersecting job-process workflows, outperforming all competing teams.

• **3rd Place – AstraZeneca Hackathon, Skoltech (2020)** | Created a social-media–driven engagement strategy and prototype platform to raise public awareness of heart-failure risks.

SCHOLARSHIPS

• **Grant** for Academic Mobility in **MIT - $17500** in total.

I was one of the three students, who passed competition to join one of the MIT lab for several months to conduct joint research.

• **Grant** for Academic Mobility in PolyY Hong Kong - **$60000 HKD** in total.
I won the RSAP - Incoming program.

• **Russian Presidential Scholarship for Studying Abroad - $12000** .

I've been accepted to study in Peking University (№1 Uni in Asia).

• **Skoltech** Scholarship for Excellent Study - **$15000** in total.

I was in the top 10% of my class and graduated with a diploma with merit. GPA 4.8/5.

• **Skoltech** Scholarship for Development, Top Paper Award - **$500** one-time payment.

I published one of the best papers between the Skoltech students in the year 2023.

• **Skoltech** Scholarship for Development, Top Paper Award **- $500** one-time payment.

I published one of the best papers between the Skoltech students in the year 2022.

SKILLS

Programming:	**Engineering:**
Python (Multiprocessing, Multithreading, Numpy)	CATIA V5/V6
Data Science (Pandas, Sci-kit)	NX Unigraphics
Robot Operating System	SolidWorks
MATLAB/Simulink	SolidWorks Simulation
Ardupilot/MAVLink	3D-printing
Linux	Quick Prototyping
C#/Unity	Soldering
OpenCV + DNN	Machining
AirSim Simulation	Plastic Molding
ESP/STM32, Raspberry Pi, Jetson Series.	FPV Flight Experience
Pytorch	Depth Cameras (Kinect, Realsense)
CI/CD	
Docker	
SmolAgents	
LangChain	
LlamaIndex	

COURSES

Fine-tuning Large Language Models, Jan 2025

Conscious OOP in Python, Dec 2024

Langchain Chat with your Data, Jan 2025
