

Roman Ibrahimov

CONTACT INFORMATION

A.A. Potter Engineering Center #141
500 Central Dr.
West Lafayette, IN 47907

E-mail: ibrahir@purdue.edu
Mobile: (574) 581-0957
Webpage: roman-ibr.github.io

EDUCATION

Purdue University, West Lafayette, IN, USA
M.S., Aeronautics and Astronautics, CGPA: 3.9/4.0

Jan 2021-present

- **IEEE RAS Summer School on Multi-Robot Systems**, CTU, Prague, Czechia, *1-5 Aug 2022*
Multi-UAV control, perception, localization, and planning
- **DroneCamp**, University of California, ANR, Monterey, California, USA, *27 June - 1 July, 2022*
UAV hardware & sensors, mission planning, flight skills, safety & regulations

Skolkovo Institute of Science and Technology, Moscow, Russia
M.S. with Distinction, Space and Engineering Systems, CGPA: 4.85/5.0

Sep 2018-May 2020

ADA University, Baku, Azerbaijan
B.S. Summa Cum Laude, IT and Systems Engineering, CGPA: 3.90/4.0

Sep 2014-May 2018

- **ITMO University**, St. Petersburg, Russia, *Spring 2017*
Exchange Student, Control Systems and Robotics, CGPA: 5.0/5.0
 - **Middle East Technical University**, Ankara, Turkey, *Spring 2016*
Exchange Student, Electrical and Electronics Engineering, CGPA: 3.80/4.0
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HONORS AND AWARDS

Purdue University Poster Symposium Best Poster Award

April, 2022

Skolkovo Foundation Full Graduate Scholarship

2018-2020

ACM SIGGRAPH Asia Best Demonstration Award

November, 2019

Skolkovo Presidential Scholarship

November, 2019

President's List of Honor, ADA University

2014-2017

Erasmus+ Exchange Scholarship, METU

Spring 2016

FameLab World Finalist, Cheltenham, the UK

June 2015

1st place, Microsoft ImagineCup Competition, Baku, Azerbaijan

May 2015

4th place, International Rudolf Ortvyay Competition in Physics, Hungary

Dec 2014

WORK EXPERIENCE

Research Assistant, NASA RETH Institute, IN, USA
Situational Awareness team

May 2021-present

Teaching Assistant, Purdue University
CNIT 155 Introduction to Software Development Concepts (in Python)

Jan 2021-present

Teacher, Landau High School, Baku, Azerbaijan
Cambridge IGCSE Computer Science

Aug 2020-Dec 2020

Instructor, International College in Baku, Baku, Azerbaijan
Scholastic Assessment Test (SAT), Graduate Record Examinations (GRE)

June 2020-Dec 2020

Intern , Universal Robots, Moscow, Russia <i>Human-Robot Collaboration (HRC) through a quadcopter</i>	<i>Summer 2019</i>
Visiting Research Student , Joint Institute of Nuclear Research, Dubna, Russia <i>Supervisor: Prof. Marek Peryt</i>	<i>Summer 2018</i>
Intern , Azercosmos OJSCo, Baku, Azerbaijan <i>Networking Systems at Ground Control Department</i>	<i>Summer 2017</i>
Teaching Assistant , ADA University <i>COE 244 Digital Logic Design, ENCE 2402 Electrical Circuits, PHYS 102 Physics II</i>	<i>2015-2017</i>
Instructor , Baku Higher Oil School <i>Robotics Bootcamp for the underrepresented university students</i>	<i>Fall 2016</i>
Instructor , ADA Math Center <i>Co-created the center, helped students in Electrical Circuits and Physics courses</i>	<i>2015-2016</i>
Extracurricular Course Instructor , Baku Anatolian High School <i>Taught Experimental Physics and Microcontroller courses to the 9th and 10th graders</i>	<i>Fall 2015</i>
Intern , R.I.S.K. Company, Baku, Azerbaijan <i>IT Hardware Systems</i>	<i>Summer 2015</i>

PROJECT EXPERIENCE

Resilient Extraterrestrial Habitats , NASA RETH Institute, Purdue University - A control-theoretic autonomy framework to support resilient design and operation - Automated active learning framework with robots and humans-in-the-loop - Methods for detection and diagnosis of anticipated and unanticipated faults - Establishing SmartHabs with autonomous abilities to sense, anticipate and respond	<i>May 2021-present</i>
Bio-inspired nano-quadcopter for map building , Purdue University - API on FreeRTOS to read sensor reading on the quadcopter - Sending sensor reading to the ROS base station via radio - Collecting point cloud from the quadcopter and building map - Predicting the map of the environment using ML techniques	<i>Sep 2021-present</i>
Human-Drone Interaction through a Tactile Wearable , Skoltech - A human-drone communication with impedance control and vibrotactile feedback - A tactile wearable built with eccentric rotating mass (ERM) motors - Virtual Reality (VR) application built based C# for teleoperation and aerial manipulation - Remote object manipulation with drones	<i>Oct 2018-May 2020</i>
Balloon Satellite for Testing Solar Cells in High Altitude , Skoltech - Model-based Systems Engineering for mission success - CubeSat built with on-board controller, solar cells, storage devices, and GPS tracking system - Data collected about current, voltage and temperature (CVT) of the tested solar cells - Retrieved payload with no damage after landing from 35km maximum altitude	<i>Sep 2018-Jan 2019</i>
Gas Leak Detecting Mobile Robot for NICA Collider , JINR - Autonomous navigation around elliptical collider - Mobile robot with an on-board temperature camera - Computer Vision (CV) algorithm based on Python for detection nitrogen gas leak from the collider - Computer-based user interface for remote monitoring	<i>Summer 2018</i>

PUBLICATIONS

R. Ibrahimov , R. Wang, S. Sun, and F. Tajiki “A Bio-inspired Nano-quadcopter for 2D Mapping Using AI”, <i>Purdue University Poster Symposium 2022</i> , West Lafayette, Indiana, USA, Apr. 26, 2022
A. Behjat, R. Ibrahimov , A. Lenjani, A. Barket, K. Martinus, A. Maghareh, D. Whitaker, I. Bilonis, and S. Dyke, “A Computational Framework for the Evaluation of Resilience in Deep Space Habitat Systems,” <i>ASME</i>

2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference , St. Louis, Missouri, USA, Aug. 14-17, 2022, (preprint)

E. Tsykunov, A. Fedoseev, E. Dorzhieva, R. Agishev, **R. Ibrahimov**, D. Vasquez, L. Labazanova, and D. Tsetserukou, “DroneStick: Flying Joystick as a Novel Type of Interface,” *ACM SIGGRAPH Asia 2021 Emerging Technologies*, Virtual, Dec. 14-17, 2021

E. Karmanova, V. Serpiva, S. Perminov, **R. Ibrahimov**, A. Fedoseev, and D. Tsetserukou, “SwarmPlay: A Swarm of Nano-Quadcopters Playing Tic-tac-toe Board Game against a Human,” *ACM SIGGRAPH 2021 Emerging Technologies*, Virtual, Aug. 9-13, 2021

R. Ibrahimov, N. Zherdev, and D. Tsetserukou, “DroneLight: Drone Draws in the Air using Long Exposure Light Painting and ML,” *29th IEEE International Conference on Robot & Human Interactive Communication (IEEE RO-MAN 2020)*, Naples, Italy, Aug. 31-Sept. 4, 2020

E. Tsykunov, R. Agishev, **R. Ibrahimov**, T. Moriyama, L. Labazanova, H. Kajimoto, and D. Tsetserukou “SwarmCloak: Landing of Two Micro-Quadrotors on Human Hands Using Wearable Tactile Interface Driven by Light Intensity,” *2020 IEEE Haptics Symposium* , Washington DC, USA, March 28-31, 2020

R. Ibrahimov, E.Tsykunov, V. Shirokun, A. Somov, and D. Tsetserukou, “DronePick: Object Picking and Delivery Teleoperation with a Drone Controlled by a Tactile Wearable,” *28th IEEE International Conference on Robot & Human Interactive Communication (IEEE RO-MAN 2019)*, New Delhi, India, 2019

E. Tsykunov*, **R. Ibrahimov***, D. Vasquez, D. Tsetserukou, “SlingDrone: System for Navigation and Interaction with the Environment Using a Single Drone and VR,” *25th ACM Symposium on Virtual Reality Software and Technology (VRST 2019)*, Sydney, Australia, 2019

*- authors contributed equally to the paper

E. Tsykunov, R. Agishev, **R. Ibrahimov**, L. Labazanova, T. Moriyama, H. Kajimoto, D. Tsetserukou, “SwarmCloak: Landing of a Swarm of Nano-Quadrotors on Human Arms,” *Int. Conf. on Computer Graphics and Interactive Technologies (ACM SIGGRAPH Asia 2019)*, *Emerging Technologies*, Brisbane, Australia, 2019, (**Best Demonstration Award**).

E.Tsykunov, R. Agishev, **R. Ibrahimov**, A. Tleugazy, and D. Tsetserukou, “SwarmTouch: Guiding Swarm of Nano-Quadrotors with Impedance Control using Wearable Tactile Interface,” *IEEE Transactions on Haptics*, 2019

G. Yashin, D. Trinitatova, R. Agishev, **R. Ibrahimov**, and D. Tsetserukou, “AeroVR: Virtual Reality Teleoperation System for the UAV Robotic Manipulator,” *19th IEEE International Conference on Advanced Robotics (ICAR 2019)*, Belo Horizonte, Brazil, 2019

E. Tsykunov, R. Agishev, **R. Ibrahimov**, T. Moriyama, L. Labazanova, H. Kajimoto, D. Tsetserukou, “SwarmCloak: Landing of Two Micro-Quadrotors on Human Hands Using Wearable Tactile Interface Driven by Light Intensity,” *IEEE Haptics Symposium (Haptics 2020)*, Washington DC, US, 2020

CONFERENCE
AND JOURNAL
REVIEWER

IEEE International Conference on Robotics and Automation (ICRA) 2021, IEEE ICRA 2020, ACM Conference on Human Factors in Computing Systems (CHI) 2020, Virtual Reality & Intelligent Hardware Journal 2020

TECHNICAL
SKILLS

Programming: C/C++, Java, Python, MATLAB/Simulink, LabVIEW, L^AT_EX

Robotics: Robot Operating System (ROS), ROS2, Gazebo, RViz, Unity

MCUs: myRIO, Arduino, Libelium

Mechanical: CAD (SolidWorks), 3D Printing, soldering, laser/plasma cutting