

· Arman Petrosyants ·

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Arman is a tech savvy engineer and a Ph.D. student. He is proficient in domains of body sensors, data analysis and modelling; and wields systematic approach to tackle problems. In a spare time, he enjoys reading fantasy and sci-fi, playing videogames and unleashing his inner musician.

WORK EXPERIENCE

Research & Development Engineer

Moscow, Russia

Tsuru Robotics — Flyfire

Mar 2020 – Nov 2021

- Real-time (up to 25 Hz) **UWB-based Local Positioning System** (UWBLPS) using **bare-metal C**:
 - Developed UWBLPS that supports any amount of drones. It is based on **time difference of arrival** (TDoA) principle with **time-division multiple access** (TDMA) collision avoidance.
 - Developed **Kalman Filter** and **Gradient Descent with momentum** for TDoA, orientation and on-board telemetry to get the coordinates.
 - Developed firmware for drones' UWBLPS.
 - **UART/Segger RTT** for debugging and logging.
 - **MATLAB** data analysis tools and firmware prototyping. **Python** for automation.
 - Achieved faultless **position hold** with UWBLPS for numerous drones.
 - Achieved positioning **error margin of 10-30 cm**, homogeneous across the setup.
- Drone Show System
 - Conducted drones' wind resistivity tests in a certified facility with a wind tunnel.
 - Conducted drones' luminosity study in a certified facility.
 - Developed Drone Show System User Manual for drones and peripherals.

Research Assistant

Moscow, Russia

Bauman MSTU, Biomed Engineering dep-t, Bioimpedance Measurements Lab

Nov 2018 – May 2020

Thesis: *An Electrical Impedance Tomography System*

- Researched image reconstruction algorithms in **MATLAB** for an **EIT** system emulated with **COMSOL**.
- Reduced reconstruction speed from approx. 14 min/frame to 1.3 min/frame for Newtonian reconstructors.

Intern

Moscow, Russia

GE Healthcare, MRI dep-t

Jan 2019 – Dec 2019

Research & Development Summer Intern

Moscow, Russia

Huawei Labs

Jul 2018 – Sep 2018

Developed real-time (sub-200ms latency) Heart-Rate detection algorithm in **MATLAB**.

- Achieved 30ms delay by optimizing the **bare-metal C** firmware run on Ras. Pi3
- Built an EDA pipeline with **MATLAB** for **PPG-driven SpO₂** analysis (Red, Green and IR channels).

Research Assistant

Moscow, Russia

Bauman MSTU, Biomed Engineering dep-t, Robotic Rehab Lab

Jan 2017 – May 2018

Thesis: *Electromyography and Kinematic Sensor-based Arm Prosthesis*

- Formulated general theoretical outlines for **arm prosthetic development**.
- Developed **clinical-grade EMG biosensor** with built-in (hardware) envelope of the EMG signal.
- Developed power source and microcontroller unit + its peripherals to drive the prosthetic and sensors.
- **Altium Designer** for PCB development.
- **Proteus** and **MicroCap** for schematic behaviour analysis and refinement.

Embedded Systems Intern

Moscow, Russia

Motorica

Oct 2016 – Jun 2017

Lab Assistant

Moscow, Russia

Bauman MSTU, Biomed Engineering dep-t, Protein and Ultrasonic Lab

Oct 2015 – Jan 2017

EDUCATION

Skolkovo Institute of Science and Technology

Moscow, Russia

Ph.D. Student. Computational Data Science and Engineering

Oct 2021 – Present

Applying multimodal techniques to conduct data analysis and research of esports (LoL, CS:GO) professionals' psychophysiological state: body sensors, emotion expression, mouse/keyboard I/O, in-game data

Bauman Moscow State Technical University

Ph.D. Student in Medical Instrumentation: Real-time Impedance Heart Monitoring

M.Eng. in Biotechnical systems and technologies

B.Eng. in Biomedical engineering and information technologies

Graduated **summa cum laude** twice (Bachelor's and Master's diplomas)

Moscow, Russia

Sep 2020 - Sep 2021

Class of 2020

Class of 2018

PUBLICATIONS AND CONFERENCE PARTICIPATIONS

A. Tikhomirov, A. Briko, N. Seleznev, **A. Petrosyants**, S. Shchukin.

Comparison of Elliptical and Spherical Geometric Model of the Heart for Computer Multi-channel Electrical Impedance Cardiography.

Ural Symposium on Biomedical Engineering, Radioelectronics and Information Technology (USBREIT), Yekaterinburg, Russia, 2021. doi: [10.1109/USBREIT51232.2021.9455084](https://doi.org/10.1109/USBREIT51232.2021.9455084)

A. Petrosyants *et al.*

Electrical Impedance Tomography Data Acquisition Emulation.

Ural Symposium on Biomedical Engineering, Radioelectronics and Information Technology (USBREIT), Yekaterinburg, Russia, 2020, pp. 44-47. doi: [10.1109/USBREIT48449.2020.9117667](https://doi.org/10.1109/USBREIT48449.2020.9117667)

Yu. Ershov, V. Akopyan, S. Alkov, **A. Petrosyants**.

Theoretical Bases of Ultrasonic Phaco-Operation.

J Tech Living Sys, Tome 14, No.1 2017. pp. 36-39. ISSN: [2070-0997](https://doi.org/10.2070/0997)

A. Petrosyants, V. Akopyan *et al.*

A Model of Ultrasound Phacodispersion of an Eye Lens.

Mathematics. Computing. Education. MCE-2017. Pushchino, Russia, Jan 23-28 2017

V. Akopyan, M. Bambura, **A. Petrosyants**, S. Alkov, Yu. Ershov.

An Ultrasonic Injection Device.

MedTech-2016. Moscow, Russia @ BMSTU, Nov 22-23 2016

TECHNICAL SKILLS & LITERACY

Languages	python, MATLAB, Bare-metal C (Cortex-M4), Mathematica
Familiarity	bash, fish, git, C++ basics, CUDA, ROS/ROS2
Data Analysis	EDA (python libraries: pd, np, plt, sns, numba), some classic ML techniques
Knowledge	Bioelectricity, Body Sensors, Linear Algebra, Algorithms, Optimization (GMRES, MINRES)
CAD Software	Autodesk Inventor, SolidWorks, Altium Designer, MicroCap, Proteus, Simulink, COMSOL

LANGUAGES

English	C1-C2 proficiency. Freely operating CS, DS and BME scientific papers
Russian, Armenian	Native speaker
Chinese	A2 proficiency. Previously B1-B2, now degraded due to lack of use
German	A1-A2 proficiency. Beginner level
Italian	A1 proficiency. Beginner level

SIDE PROJECTS & GIGS

ROS2 Path Planner Package: Developed ROS2 package to plan a path with RRT(rapidly expanding tree) algo.

Yandex: Overseen computer science related search inquiry labeling *Jun 2021 – Oct 2021*

Artes Electronics: Consulted on breast cancer electrical impedance diagnostics methods. *May 2021 – Sep 2021*

Vocal and Guitar: Improving musical skills not to be ashamed at karaoke. *Dec 2019 – Present*

Maths Tutor: Preparing pupil for olympiads participation and state grad exams. *Nov 2016 – Present*

alphadog: Curated content of a public page devoted to Tech, TV-series and Videogames. *Feb 2015 – Aug 2016*