Arman Petrosyants · Research Engineer

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Education

Bauman Moscow State Technical University — Moscow, Russia
Ph.D. Candidate — *Sep 2020 – Present*

Bauman Moscow State Technical University — Moscow, Russia
M.Eng. in Biomedical Engineering and Medical Instrumentation — *Sep 2018 – Aug 2020*
— Graduated with Honors, 4.8 GPA (max 5.0).

Bauman Moscow State Technical University — Moscow, Russia
B.Eng. in Medical Instrumentation Tech — *Sep 2014 – Aug 2018*
— Graduated with Honors, 4.8 GPA (max 5.0).
— Acquired three academic awards throughout the University studies

Academic Awars

Academic Council Scholarship | Outstanding Academic and Research Performance — *Jan 2018 – Aug 2018*
Russian President Scholarship | Research Performace — *Jan 2017 – Jan 2018*
Russian Gov-t's Scholarship | Extracurricular Scholar Performance — *Sep 2016 – Sep 2017*

Research Experience

Research & Development Engineer — Moscow, Russia
Tsuru Robotics — *Mar 2020 – Present*
Researched system architectures fitness for conducting real-time TDOA positioning:
— Developed architecture capable of positioning an infinite amount of devices in the scope of one system.
Conducted several attempts to reduce the positioning error to sub-30 centimeter values
— Merged 3 different previously researched architecture solutions to obtain a plausible error margin
— Conducted numerical studies of gathered data to evaluate system performance
Conducted experimental studies on TDOA-positioning system parameters' correlation with the error of positioning.
— Used MoCap System as a Ground-Truth Data source.

Bauman MSTU, Biomed Engineering dep-t, Imedance Measurements Lab — Moscow, Russia
Research Assistant — *Nov 2018 – May 2020*
Thesis: *An Electrical Impedance Tomography System*:
— Researched image reconstruction algorithms for an EIT system.
— Applied image reconstruction algorithms for a non-full circle electrode array.
— Developed MATLAB code to implement several reconstruction algorithms.
— Developed *in silico* data generation pipeline for hypotheses verification.
—— COMSOL Multiphysics for data generation.
—— Autodesk Inventor for geometrical model generation and parametrization.

Research & Development Intern — Moscow, Russia
Huawei Labs, Sensors & Algorithms Team — *Jul 2018 – Sep 2018*
Researched ways to get SpO2 data with Red, Green and IR spectrum PPG.
Developed MATLAB data processing pipeline for PPG biological signal.
Developed real-time Heart-Rate detection algorithm based on the PPG data.
Conducted numerical studies to determine best-fit zero-phase offset filtration algorithm
Adjusted system behaviour to be compatible with sub-200 ms reaction time.

Bauman MSTU, Biomed Engineering dep-t, Robotic Rehab Lab — Moscow, Russia
Research Assistant — *Aug 2016 – May 2018*
Thesis: *Electromyography and Kinematic Sensor-based Arm Prosthesis*:
— Researched the optimal EMG channels number for prosthetic arm control.
— Researched the optimal refresh rate of gyroscopes and accelerometers for prosthetic arm control.
— Formulated general theoretical outlines for arm prosthetic development.
— Developed clinical-grade EMG biosensor with built-in (hardware) envelope of the said signal.
—— Altium Designer for PCB development.

—— Proteus and MicroCap for schematic behaviour analysis and refinement.
— Developed a close-loop tactile feedback system:
—— with haptic motors;
—— with Ni-Cu alloy based resistance-pressure sensor.

Lab Assistant Moscow, Russia
Bauman MSTU, Biomed Engineering dep-t, Protein and Ultrasonic Lab *Oct 2015 – Feb 2017*
Main fields of work: colloid chemistry, acoustics, biophysics.
Researched ultrasound interactions with proteins:
— Studied the dynamics of albumen colloid solution density vs. the amount of US power, transferred to the solution.
— Studied albumen viscosity under the direct impact of US source.
Conducted main aspects of experimental studies.
— Developed the protocol of the study to get reproducible results
— Statistically processed the data with R and MATLAB.

Work Experience

Sales and Technical Marketing Intern Moscow, Russia
GE Healthcare, MRI dep-t *Jan 2019 – Dec 2019*
Adapted from English to Russian MRI technical documentation for regulatory and utility purposes.
Adapted marketing materials (with verification of legal and compliance).
Participated in MRI equipment certification and registration:
— Preparation of technical documentation and regulatory certificate drafts.
Arranged the supply chain of MRI user manuals to terminal users.
Arranged 15 separate events with Key Opinion Leader radiologists' participation.

Embedded Systems Intern Moscow, Russia
Motorica *Oct 2016 – Jan 2018*
Educated superior engineering staff on:
— Physiological bases of muscle contraction,
— Body-sensor interactions,
— General medical equipment design guidelines.
Participated in iEMG sensor development.
Developed Bluetooth-controlled (with Arduino support) demo-purpose forearm prosthetic.
— Took part in development of motors' control system.

Publications and Conference Patricipations

A. Petrosyants, A. Volkov, A. Nikolaev. *Electrical Impedance Tomography Data Acquisition Emulation.* | *Conf P*
Ural Symposium on Biomedical Engineering, Radioelectronics and Information Technology (USBEREIT), Yekaterinburg, Russia, 2020, pp. 44-47. doi: 10.1109/USBEREIT48449.2020.9117667

Yu. Ershov, V. Akopyan, S. Alkov, **A. Petrosyants**. *Theoretical Bases of Ultrasonic Phaco-Operation.* | *J Publ*
J Tech Living Sys, Tome 14, No.1 2017. pp. 36-39. ISSN: 2070-0997

A. Petrosyants, V. Akopyan *et al. A Model of Ultrasound Phacodispersion of an Eye Lens.* | *Conf P*
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.* | *Conf P*
MedTech-2016. Moscow, Russia @ BMSTU, Nov 22-23 2016

Technical Skills & Literacy

Electrosphysiology	Processes Modelling	Low-Noise Amps	Embedded C	Lab Reports Prep
iEMG / sEMG	COMSOL	PCB Design	I2C/UART	MS Word
EIT / ICG	Python	MicroCap	Firmware	LaTeX
MATLAB	git	Proteus	nRF52	

Extracurricular Activities & Hobbies

Vocal and Guitar: Developing musical skills not to be ashamed of myself at karaoke *Dec 2019 – Present*
Maths Tutor: preparing school students for olympiads participation and state grad exams *Nov 2016 – Jun 2020*
Admin at alphadog: a public page devoted mainly to Tech, TV-series and Videogames *Feb 2015 – Aug 2016*