Arman Petrosyants

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Education

Bauman Moscow State Technical University Moscow, Russia

M.Sc. in Medical Instrumentation, Technologies and Biomedical Engineering *Sep 2018 – Aug 2020*

— Graduated with Honors, 4.8/5.0 GPA (max 5.0).
— 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 *in silico* data generation pipeline for hypotheses verification.
——— COMSOL Multiphysics for data generation.
——— Autodesk Inventor for geometrical model generation and parametrization.
—— Developed MATLAB code to implement several reconstruction algorithms.

Bauman Moscow State Technical University Moscow, Russia

B.Sc. in Medical Instrumentation, Technologies and Biomedical Engineering *Sep 2014 – Aug 2018*

— Graduated with Honors, 4.8/5.0 GPA (max 5.0).
— 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.

Work Experience

Tsuru Robotics Moscow, Russia

Junior Research & Development Engineer *Jun 2020 – Present*

— Developed real-time (40 us) UWB-based Positioning System:
—— Developed architecture capable of positioning an infinite amount of devices in the scope of one system.
—— Implemented data analysis pipeline in MATLAB for system refinement.
——— Mitigated positioning error from over 5m to sub-30cm precision of detection.
— Participated in the Drone Show preparation:
—— Assembled, tested and deployed 3 power supplies for LED arrays and arrays themselves.
—— Assisted in MoCap-based system development of tracking the correctness of an aim in the shooting range.
——— The main assumption: an aim has external coordinates (A-GPS), the gun has only MoCap-based coordinates.

Embedded Systems Intern *Mar 2020 – Jun 2020*

— Developed real-time (100 us) Time-of-Arrival based Positioning system with Cortex-M4 chip:
—— Coded Firmware with C language to enable the system.
—— UART/Segger RTT for debugging and logging.
— Researched said Positioning system's parameters and error margins.
—— MATLAB as a main tool of gathered data analysis.

GE Healthcare, MRI dep-t Moscow, Russia

Sales and Technical Marketing Intern *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.

Huawei Labs, Sensors & Algorithms Team Moscow, Russia
Research & Development Intern *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.
— Adjusted system behaviour to be compatible with sub-200 ms reaction time.

— Tools used to achieve up-mentioned:
—— Raspberry Pi3 + Raspbian as a host system
—— C + Linux Terminal for firmware development and data gathering
—— MATLAB for data analysis

Motorica Moscow, Russia
Embedded Systems Intern *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.

Bauman MSTU, Biomed Engineering dep-t, Protein and Ultrasonic Lab Moscow, Russia
Research & Lab Assistant *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.

Academic Awards, Publications and Conferences

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

Theoretical Bases of Ultrasonic Phaco-operation
Yu. Ershov, V. Akopyan, S. Alkov, ***A. Petrosyants***
J Tech Living Sys 1 2017. ISSN: 2070-0997

Academic Council Scholarship | *BMSTU* Jan 2018 – Aug 2018
Russian President Scholarship | *BMSTU* Jan 2017 – Jan 2018
Russian Government Scholarship | *BMSTU* Sep 2016 – Sep 2017

Technical Skills and Interests

Processes Modelling	MATLAB	Altium Designer	Inventor	Signal Processing
PCB Design	Python	Proteus	COMSOL	Biosignals
Firmware	C	MicroCap	MS Office	Wireless Comms