

## Syuzanna Matevosyan

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### EDUCATION

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#### Erasmus Mundus in Biomedical Engineering

2024 - Present

*Joint master's degree in University of Kragujevac (Serbia), University of Patras (Greece),  
University of Medicine and Pharmacy "Grigore T. Popa" (Romania)*

GPA: 4.0/4.0

Coursework: Rehabilitation engineering, signal processing, mixed reality in health, clinical engineering & HTA, biomechanics, biomedical device design

Selected Projects:

1. AR-based rehabilitation tool – Developed an interactive training system for myoelectric prosthesis control, integrating sEMG classification with AR feedback.
2. sEMG movement classification – Achieved >90% accuracy in classifying 17 different hand movements.
3. OCT Image Processing Method - Implemented pixel-based tissue segmentation in Python with >80% accuracy.
4. Colorectal polyp detection (Kvasir-SEG, U-Net) - Developed deep learning model for automatic polyp detection in colonoscopy images, achieving 97% segmentation accuracy.
5. Conducted structured reviews on rehabilitation robotics, explainable AI in medical imaging and healthcare technology assessment frameworks.

#### Yerevan State University

Yerevan, Armenia

*Bachelor's degree in Biophysics and Bioinformatics*

2020 - 2024

Bachelor Thesis: Development of an EMG Signal Acquisition System for Hand Gesture Classification

During Bachelors spend one semester at Jagiellonian University, Krakow, Poland with a focus on bioinformatics and data science.

GPA: 3.8/4

#### 42 Yerevan

*Self-learning programming school with practical projects*

Yerevan, Armenia

Knowledge acquired: C/C++, MATLAB, Python, AI/ML

2021 – 2023

### EXPERIENCE

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#### Armionics - Biomedical Engineer (Jan 2024 – Jul 2024)

Yerevan, Armenia

*Prosthesis company for upper limb disabled people.*

- Designed and prototyped an EMG-based acquisition and control system for myoelectric prostheses, using Arduino-based hardware with sEMGs
- Benchmarked 6 ML algorithms (SVM, Random Forest, Decision Tree, RNN, etc.) for EMG classification, achieving up to 97.56% accuracy in offline gesture recognition
- Optimized training time by 80% via comparison of algorithms inference time
- Optimized number of electrodes to two through PARAFAC decomposition spatial mode
- Built and tested a functional prototype of the prosthesis control system, validated in-lab with multiple trials and reduced misclassification errors by 20% compared to baseline methods
- Collaborated with clinicians and engineers to define control requirements and evaluate usability, contributing to clinical readiness of the device for patient trials
- Authored and defended a Bachelor's thesis based on this work, strengthening the academic-to-industry transfer of technology

Tools: Arduino IDE, Breadboard, Electrodes, Python, MATLAB, DWT, ML (SVM, Random Forest, RNN), Signal Processing, Tensor Decomposition

#### TUMOLabs Incubator - Product Developer (Sep 2023 – Nov 2023)

Yerevan, Armenia

*Hackathon & 12-week start-up incubation program*

- Led end-to-end development of an AI-powered virtual assistant for radiologists, designed for early detection of lung masses in X-ray images
- Conducted 15+ user interviews with clinicians and patients to define requirements, ensuring strong clinical relevance and usability
- Benchmarked multiple CNN architectures (PyTorch/Kaggle) for detection tasks, achieving AUC of 0.91 on public datasets
- Created functional prototype integrating image processing pipeline with Javascript user interface, presented at final demo day
- Performed market analysis for functionality improvement and product positioning
- Applied agile development practices (Jira, sprint reviews) in a multidisciplinary team

Tools: PyTorch, Python, CNNs, Kaggle, Figma, Image Processing, Agile, Jira

**MedProgress Healthcare Foundation – Event Organizer (Sep 2022 – Sep 2023)**  
*Interdisciplinary programs, congresses and conferences in healthcare*

Yerevan, Armenia

- Organized 10+ healthcare events and roundtables in rehabilitation, prosthetics, and assistive technologies.
- Coordinated logistics, speakers, and volunteers across academia, industry, and clinical practice.

## **VOLUNTEERING**

- Medical Technologies Innovation (2024–2025): Co-founded and led team to organize international conferences in Serbia and Greece. 2024 – 2025
- Erasmus Mundus Association / ESN (2021–2024): Led volunteers supporting international student integration. 2021 - 2024

## **CORE COMPETENCIES**

- Prosthetics & Rehabilitation: EMG-based control systems, AR/VR training, musculoskeletal modeling (OpenSim).
- AI & Signal Processing: EMG/EEG analysis, medical image segmentation (OCT, Kvasir-SEG), ML/AI (SVM, RF, CNN, U-Net).
- Prototyping & Development: Hardware/software integration (Arduino, sensors), rapid prototyping, functional model testing.
- Innovation & Collaboration: Market/HTA analysis, interdisciplinary teamwork, event organization and leadership.

## **LANGUAGE**

English-C1 (TOEFL - 104)  
 Russian-bilingual

Armenian – mother tongue  
 German – A1 (DSD Pro 1-week Exchange in Germany)