Syuzanna Matevosyan

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Biomedical engineer specializing in AI-driven signal/image processing. Hands-on experience developing EMG-based control systems, AR rehabilitation tools, and deep learning models with accuracy up to 97%. Skilled in prototyping, bringing ideas and taking initiatives in intersection of engineering and clinical needs.

EDUCATION

Master's Degree | 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
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: Implemented pixel-based tissue segmentation in Python with >80% accuracy.
4. Colorectal polyp detection (Kvasir-SEG, U-Net): U-Net automatic polyp detection in colonoscopy images, achieving >70% wihIoU and Dice 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

Armbionics - 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 design parameters and evaluate usability
- 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)   Yerevan, Armenia
Interdisciplinary programs, congresses and conferences in healthcare

- Organized 10+ healthcare events on rehabilitation, prosthetics, and assistive technologies, engaging clinicians, engineers, and policymakers.
- Coordinated logistics, speaker outreach, and volunteer management, ensuring smooth execution of national and international programs.

VOLUNTEERING

Founder of Medical Technologies Innovation (2024–2025)
- Founded and led team of more than 7 people to organize international conferences. Successfully executed two scientific conferences in Serbia and Greece, bridging together local and international network of Erasmus Mundus students.
Volunteer Coordinator at Erasmus Mundus Association / ESN (2021–2024)
- As a volunteer coordinator, led team of 15 volunteers supporting international student integration in Armenia.

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