Aleksa Milovanović Mr

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Education

MSc Applied Mathematics | University of Novi Sad — Novi Sad, Serbia
GPA: NA | Track: Tehno-mathematics — 2025 - Present
- **Thesis:** NA

BSc Applied Mathematics | University of Novi Sad — Novi Sad, Serbia
GPA: 9.57/10.0 | Track: Data Analytics and Statistics — 2022 - 2025
- **Thesis:** On solving the viscous Burgers' Equation
- **MSc-Level Courses:** Advanced Topics in Functional Analysis, PDEs

Experience

Teaching Associate | University of Novi Sad, Faculty of Sciences — Nov 2025 - Present
- Chair of Analysis, Probability and Differential Equations
- Fall semester: Introduction to Analysis, Analytic Geometry, Analysis for IT Students
- Spring semester: Calculus I, Software for Data Processing

Research Intern | Institute of Physics Belgrade — May 2025 - Present
- Group for Gravitation, Particles and Fields | Supervisor: Igor Prlina
- Topic: Objective collapse models with stochastic evolution corrections

Teaching Associate | Petnica Science Center — Apr 2025 - Present
- Mathematics Seminar for High School Students
- Topics: functions, calculus, vector spaces, sequences, pre-Hilbert spaces

Analytics Intern | Statistical Office of the Republic of Serbia — Nov 2024 - Dec 2024
- Power BI training, including visualizations, slicers, bookmarks and DAX language
- Analysing available data and creating a SharePoint page to present the results

Student Volunteer | Faculty of Sciences, Novi Sad — Oct 2024 - Dec 2024
- Weekly research seminars at the Department of Physics
- Topics: KdV equations, Kepler's laws, Fractional Calculus, Zener Model

Presentations

Outlining the Design Space of XAI Systems for Medical Diagnosis (TUW) — 2023
Provided a comprehensive understanding of context-dependent diagnosis and challenges related to data integration in MAI applications. Presented innovative solutions such as data prioritization using a matrix interface and a phased approach for MAI engagement.

Additional Training

Machine Learning for Scientific Research Petnica Summer Institute	Aug 2025
Physics and Mathematics of Topological Textures Polytopo	May 2025
Bridging ML and MNP Research CEITEC	Feb 2025
Introduction to Number Theory and Algebraic Curves CIMPA	Sep 2024
English Language Skills in the Workplace EUGLOH	Mar 2024
Dr. Digital Erasmus	Oct 2023
The Last AI-rbender TU Wien	Jul 2023

Skills

Mathematics Analysis, Linear Algebra, Stochastics, Dynamic Systems, Optimisation
Computer Science Machine Learning, Deep Learning, Big Data, Data Analytics
Programming Python, C++, C#, MATLAB, Wolfram Mathematica, R, SQL
Languages Serbian (Native), English (C1), French (DELF B1)
Other RapidMiner Studio, Statistica, LaTeX, Google Colab, Power BI, iWork, MS Office

Selected Student Projects

Numerical and Neural Approaches to the Burgers' Equation Oct 2025

Deployed semi-implicit and explicit numerical schemes to analyse stability, accuracy and behaviour under large gradients, sharp discontinuities, high-frequency oscillations and varying viscosity parameters. Simulation data was used to train MLP and compare it to PINN. PINN demonstrated superior accuracy in preserving spatial gradients and physical consistency, while MLP produced smoother, diffusion-like approximations.

Trajectories and Inverses in 2- and 3-body Problem with PINN Aug 2025

Achieved accurate reconstruction of quarter and half circular trajectories and elliptic orbits, with acceptable performance for hyperbolic paths in two-body dynamics. Lagrangian circular configuration was successfully captured, while figure-eight and chaotic systems showed partial stability and moderate fidelity. Simulations demonstrated that hybrid PINN-based reconstruction methods effectively reproduce global orbital behavior.

Awards and Honors

- **Scholarship**, The Ministry of Education of the Republic of Serbia 2021 – 2025
- **Top 7 Finalist at UPSHIFT4**, UNICEF Serbia 2020
- **1st Place, Video Format Category**, Delegation of the EU to Serbia 2020
- **Qualified for National Physics Competiton**, Republic of Serbia 2019, 2020
- **2nd Place, District-Level Physics Competition**, Republic of Serbia 2020

Engagement

Program Assistant, Fenomena Association (Remote) Jul 2022 – Sep 2024

Supported projects in Disaster Risk Reduction, GBV prevention and Free Legal Aid. Secured WAVE project funding. Delivered peer-to-peer trainings: *Youth and emergencies: research data* and *Let's talk about fries and consent*. Co-author of *Gender Comparative Analysis* for Užice Women's Centre within UN Women's Key Steps to Gender Equality, Phase II.

Participated in 20+ programs on masculinity norms, GBV prevention, civil protection, public advocacy, youth and children's rights, sexuality, marginalized groups, election monitoring and fake news. As WG Coordinator within BEST, led inclusivity initiatives and in LTSPC project, contributed to long-term strategic planning. At Student Union, supported career development and science forum. As Student Council president, addressed sexual health, peer violence prevention and youth representation.

In my spare time, playing classical and rock guitar, read science and sci-fi, wrote a haiku poetry and trained volleyball for seven years.

References

Dora Seleši – Head of Studies for Applied Mathematics, email: dora@dmi.uns.ac.rs

Srdjan Trifunovic – Supervisor, email: srdjan.trifunovic@dmi.uns.ac.rs

Marija Petronijevic – Project Manager, email: info@fenomena.org