

Aleksandr Shemendyuk

PhD in Actuarial Science

Zürich, Switzerland

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PhD in Actuarial Science with expertise in long-term care modelling, survival analysis and health-data analytics. Former Lecturer at HEC Lausanne; created and taught “*Data Science in Business Analytics*” and “*AI Tools for Business Innovation*”. Hands-on Python and SQL, containerised deployments (Docker) and CI/CD (GitHub Actions), plus applied Gen-AI projects (OpenAI API). Publications in Insurance: Mathematics & Economics and Annals of Actuarial Science.

Contact

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Education

PhD in Actuarial Science

Lausanne, Switzerland

University of Lausanne, Department of Actuarial Science

2019 - 2024

- Thesis: Three Essays on Modeling Long-Term Care of Institutionalized Elderly in Switzerland
- Supervisor: Prof. Joël Wagner
- Keywords: Data Analysis, Longitudinal Data, Long-Term Care, Survival Analysis, Multi-State Models, Machine Learning

Master of Science in Statistical Modelling and Actuarial Science

Moscow, Russia

HSE University, Faculty of Economic Sciences

2017 - 2019

- GPA: 8.69/10.0
- Thesis: Optimal Medical Insurance in Connected SIR Centres during Epidemic Outbreak
- Supervisor: Prof. Mark Y. Kelbert
- Keywords: High Dimensional Statistics, Random Processes, Insurance Mathematics

Bachelor of Science in Applied Mathematics and Information Science

Moscow, Russia

HSE University, Faculty of Computer Science

2013 - 2017

- GPA: 8.27/10.0
- Thesis: Boundary Conditions, which Simulate the Cauchy Problem (Transparent Boundary Conditions) for Finite-Difference Approximations of Basic Mathematical Physics Equations
- Supervisor: Prof. Vladimir A. Gordin
- Keywords: Calculus, Linear Algebra, Probability Theory, Data Science, Numerical Methods

Experience

Master Thesis Supervisor

Lausanne, Switzerland

HEC Lausanne, UNIL

Jan 2025 - Jul 2025

- Supervising 3 master's research projects for 2nd year HEC students; covering AI/ML applications from weather forecasting to sports analytics
- Projects: KAN networks for precipitation forecasting, AI-driven cycling training apps, social media impact on festival industry
- Results: One project defended on the highest grade (6/6) with publication in progress.

Lecturer

HEC Lausanne, UNIL

Lausanne, Switzerland

Aug 2024 - Jul 2025

- Taught 'Data Science in Business Analytics' to 100+ Master's students; created and delivered 'AI Tools for Business Innovation'
- Supervised projects; adopted project-based learning approach with students creating functional AI services, websites, and automated systems

AI Consultant

Lemania Auto

Lausanne, Switzerland

2024 - Present

- Building AI-powered workflows and full-stack features (Next.js, Supabase, OpenAI API, Python)
- Dashboard, database and cloud integration; positive stakeholder feedback

AI Consultant

Premium Center LTD (NumoMagic)

Edinburgh, United Kingdom

2024 - Present

- Set up CI/CD with GitHub Actions; automated tests and Docker-Compose deploys to VPS for Telegram bot (Python/aiogram)
- Added user analytics; analyzed user activity patterns to optimize engagement

Personal Project: Web App (Apartment Takeover)

Independent

Lausanne, Switzerland

2024

- Deployed production-like Next.js/Tailwind/Supabase site; 249 page views, 166 visitors, 16 countries in first 16 days
- Strong user feedback including from AXA GO Tech Lead; demonstrated full-stack development capabilities

AI Automation Consultant

HEC Lausanne, UNIL

Lausanne, Switzerland

2023 - 2024

- Automated feedback on textual answers with OpenAI API + Python; evaluated 100+ submissions and reduced grading time
- Built validation system against predefined criteria; streamlined assessment workflow

Graduate Assistant

HEC Lausanne, UNIL

Lausanne, Switzerland

Feb 2019 - Jul 2024

- Teaching assistance across diverse curriculum: Asset & Liability Management for Actuaries; Data Science in Business Analytics; Machine Learning in Business Analytics; Programming Tools for Data Science
- Supported Quantitative Methods for Management and Algorithms for Business Intelligence courses

Seminarist

HSE University, Online

Moscow, Russia

Sep 2021 - Jun 2023

- Conducted seminars for Mathematical Models and Differential Equations; Additional Chapters in Mathematical Analysis

Teaching Assistant

HSE University

Moscow, Russia

Sep 2015 - Jun 2019

- Practice sessions for foundational courses: Calculus 1-2, Linear Algebra, Probability Theory, Mathematical Models and Differential Equations

Private Tutoring

Independent

Online

Sep 2013 - Present

- Mathematics, Statistics, Programming in Python; AI tools training (ChatGPT, DeepSeek, GitHub Copilot)

Skills _____

Programming & Data

Python; R; SQL (PostgreSQL); Matlab; Rust; TypeScript; pandas; NumPy; scikit-learn; PyTorch (intro); tidyverse

Cloud & DevOps

Docker; GitHub Actions (CI/CD); Supabase; Vercel; Netlify; basic familiarity: Redis (Codecrafters/Rust), Kafka (Codecrafters/Rust), PySpark (local), GCP console; REST APIs

Web

Next.js; React; Tailwind CSS

AI & Automation

OpenAI API; Make.com; n8n.io; Voiceflow; GitHub Copilot; Midjourney/Runway/ElevenLabs (tools)

Software

Microsoft Office (Word, Excel, Teams); RStudio; VS Code; Cursor; JetBrains

Languages

Russian (native); English (fluent); French (working); Latvian (working); German (elementary)

Research and Other Interests _____

Research Interests

Actuarial modelling; survival & multi-state models; health-data analytics; ML for risk & forecasting

Interests

Gym/fitness; hiking; chess; guitar

Publications _____

2025

Compact scheme for rod transverse vibrations equation: approximation of the boundary conditions matters

Gordin, V.A., & Shemendyuk, A.

In progress
2025

Two-dimensional Parisian ruin problem and computation of corresponding Pickands constants

Jasnovidov, G. A., & Shemendyuk, A. A.

Teoriya Veroyatnostei i ee Primeneniya, 70(1), 45-72
2025

• DOI: 10.4213/tvp5617

On the Role of Equity and Pension Savings in the Financing of Homeownership in Switzerland

Huggenberger, Y., Shemendyuk, A., Wagner, J., & Wanzenried, G.

Journal of European Real Estate Research, 17(1), 50-72
2025

• DOI: 10.1108/JERER-06-2024-0045

2024

Evolution of Institutional Long-Term Care Costs Based on Health Factors

Shemendyuk, A., & Wagner, J.

- DOI: 10.1016/j.insmatheco.2024.11.007

*Insurance:
Mathematics and
Economics*, 120,
107-130
2024

On the factors determining the health profiles and care needs of institutionalized elders

Shemendyuk, A., & Wagner, J.

- DOI: 10.1016/j.insmatheco.2023.12.003

*Insurance:
Mathematics and
Economics*, 114,
223-241
2024

2023

Modeling the burden of long-term care for institutionalized elderly based on care duration and intensity

Bladt, M., Fuino, M., Shemendyuk, A., & Wagner, J.

- DOI: 10.1017/S1748499522000136

*Annals of Actuarial
Science*, 17(1), 83-117
2023

2021

Fair insurance premium rate in a connected SEIR model under epidemic outbreak

Chernov, A., Shemendyuk, A., & Kelbert, M.

- DOI: 10.1051/mmnp/2021028

*Mathematical
Modelling of Natural
Phenomena*, 16(34)
2021

2020

Discrete transparent boundary conditions for the equation of rod transverse vibrations

Gordin, V.A., & Shemendyuk, A.A.

- DOI: 10.1016/j.apm.2020.06.050

*Applied Mathematical
Modelling*, 88,
550-572
2020

2019

Optimal vaccine allocation during mumps outbreak in two SIR centres

Chernov, A., Kelbert, M., & Shemendyuk, A.

- DOI: 10.1093/imammb/dqz012

*Mathematical
Medicine and Biology:
A Journal of the IMA*,
37(3), 303-312
2019

Conferences

26th International Congress on Insurance: Mathematics and Economics (IME 2023)

Evolution of Elderly in Institutionalised Long-Term Care Based on Multiple Health Factors

Edinburgh, Scotland

July 4-6, 2023

6th Conference of the Swiss Society of Health Economics

On the factors Determining the Health Profiles and Care Needs of Institutionalized Elderly

Bern, Switzerland

June 8, 2023

Research Centre for Longevity Risk Conference

Health profiles and long-term care burden of institutionalized elderly derived from multiple health factors

*Amsterdam,
Netherlands*

May 25-26, 2023

European Actuarial Journal Conference 2022

Two talks on the topic of long-term care of institutionalized elderly

Tartu, Estonia

August 22-24, 2022

- Study of institutionalized elderly profiles derived from multiple health factors
- Determinants of institutional long-term care of dependent elderly in Switzerland

Annual Interuniversity Scientific Conference (E.V. Armensky)

Compact Approximations for the Shear Equation of a Member with Constant Coefficients

Moscow, Russia

April 5-13, 2022

24th International Congress on IME (Virtual)

Determinants of Institutional Long-Term Care of Dependent Elderly in Switzerland

(Online)

July 9, 2021

International Conference on Computer Simulation in Physics and Beyond

Discrete Transparent Boundary Conditions for the Equation of Rod Transverse Vibrations

(Online)

October 12-16, 2020

Annual Interuniversity Scientific Conference (E.V. Armensky)

Boundary Conditions that Imitate Cauchy Problem for the Equation of Rod Transverse Vibrations

Moscow, Russia

February 18-28, 2019

Annual Interuniversity Scientific Conference (E.V. Armensky)

Boundary Conditions that Imitate Cauchy Problem for Finite-Difference Equations in Problems of Mathematical Physics

Moscow, Russia

February-March 2018

International Conference on Computer Simulations in Physics

Boundary Conditions that Imitate Cauchy Problem for Finite-Difference Approximations of Basic Mathematical Physics Equations

Moscow, Russia

October 9-12, 2017