



Sándor Battaglini-Fischer

Nationality: German, Italian, Australian **Date of birth:** 27 Apr 2000

Place of birth: Atherton, Australia

Website: www.sandorbattaglinifischer.com

EDUCATION AND TRAINING

M.Sc. in Computational Science

University of Amsterdam and Vrije Universiteit Amsterdam [1 Sep 2023 – 31 Aug 2025]

City: Amsterdam | **Country:** Netherlands | **Website:** <https://www.uva.nl/shared-content/programmas/en/masters/computational-science/computational-science.html> | **Field(s) of study:** Computational modelling and numerical simulation | **Final grade:** Cum Laude | **Level in EQF:** EQF level 7 | **NQF Level:** 7 | **Type of credits:** ECTS | **Number of credits:** 120 | **Thesis:** Enhancing Computational Capabilities of High-Dimensional Dynamical Systems: Optimization of Stuart-Landau Oscillator Networks

1. Core Subjects:

- Scientific Computing
- Data Analysis and Machine Learning
- High-Performance Computing
- Complex Systems Simulation, Agent Based Modelling
- Scientific Visualisation

2. Key Skills:

- Advanced programming in languages such as Python and Julia
- Parallel computing and GPU programming
- Data visualisation and analysis
- Numerical methods and algorithms

3. Research Components:

- Research project in network science, working for Prof. Rick Quax and the Amsterdam police on a visualisation interface for criminal networks
- **Master Thesis @ IFISC (Palma, ES) on an ERASMUS+ Grant:** Working on the computational capabilities of dynamical systems, specifically harnessing oscillatory systems inspired by photonic networks to do machine learning tasks such as sentiment analysis

4. Interdisciplinary Approach:

- Integration of computer science, mathematics, and domain-specific knowledge (physics, biology, finance, chemistry...)

5. Technical Tools:

- Experience with supercomputing facilities (SNELLIUS@UvA, DAS-5@VU, Nuredduna@IFISC)
- Proficiency in scientific software and libraries (e.g., NumPy, SciPy, MPI)

6. Soft Skills:

- Problem-solving in complex computational environments
- Interdisciplinary collaboration in multiple countries
- Scientific communication and presentation

7. Participations:

- Participated in the workshop "**Scientific Machine Learning (Semester Programme)**" at the CWI (National Research Institute for Mathematics and Computer Science in the Netherlands)

8. Publications:

- **[FAILS: A Framework for Automated Collection and Analysis of LLM Service Incidents](#)**; S. Battaglini-Fischer, B. Szarvas, N. Srinivasan, A. Iosup, X. Chu; March 2025

B.Sc. in Physics

Technical University Munich [31 Aug 2019 – 30 Sep 2023]

Address: Technische Universität München Arcisstraße 21, 80333 München (Germany) | **Website:** <https://www.ph.tum.de/> | **Field(s) of study:** Physics, Mathematics, Natural sciences | **Level in EQF:** EQF level 6 | **NQF Level:** 6 | **Type of credits:** ECTS | **Number of credits:** 180 | **Thesis:** Analysis of 3D Cell Culture Experiments with Machine Learning Methods

- Mathematical foundations (Analysis and Linear Algebra)
- Fundamental Physics (Mechanics, Electromagnetism, Thermodynamics, Optics, and Quantum Physics)
- Advanced Theoretical Physics (Electrodynamics, Statistical Physics, and Quantum Mechanics)
- Biological fundamentals and Biophysics
- Research methodology, laboratory work and experimental techniques

- Scientific programming
- Chemistry fundamentals for physicists

Erasmus Exchange in the third semester to the Technical University of Denmark (DTU), where I focused on statistical and material physics.

Matura (Abitur)

Realgymnasium Bozen [31 Aug 2014 – 14 Jun 2019]

Address: Realgymnasium Bozen Fagenstraße 10, 39100 Bolzano (Italy) | Website: <https://www.rg-fob.it/de/ausbildung/realgymnasium/angewandte-naturwissenschaften.html> | Field(s) of study: Generic programmes and qualifications | Level in EQF: EQF level 4

- High school with a focus on the applied sciences, final exam (maturità) with outstanding grade (98/100)
- Exchange in the fourth year to Tuscany (Pistoia)

WORK EXPERIENCE

 **komDESIGN** – Munich, Germany

City: Munich | Country: Germany

IT Project manager, Web developer, Web content editor

[1 Jul 2022 – Current]

- I helped with the redesign of a Fortune 500 company corporate website, as well as the multi-lingual adaptation for the affiliate websites, coordinating teams in multiple countries and coaching the respective website owners on its functionality. I also worked on the front-end with HTML components, adapting CSS styling and incorporating content as well as creating automation scripts and tools as well as doing image and video editing.
- I create full-stack web applications for a range of clients using Flask and incorporating machine learning models

 **Akademie Blickwinkel** – München, Germany

City: München | Country: Germany

Website editor

[11 Oct 2020 – Current]

My tasks for this minijob include keeping the homepage and other sites up to date, administrating databases with customer information, editing customer forms as well as social media tasks.

 **AutoConcept** – Deutschnofen, Italy

City: Deutschnofen | Country: Italy

Car mechanic

[1 Jun 2016 – 30 Aug 2017]

Summerjob for two years, where I:

- Performed routine maintenance tasks like oil changes, tire rotations, and brake inspections
- Helped repair and replace vehicle components such as engines, transmissions, and suspension systems
- Followed safety protocols and maintained a clean, organised workspace

 **Clinica Veterinaria Buggiano** – Borgo a Buggiano, Italy

City: Borgo a Buggiano | Country: Italy

Practicum at a veterinarian practice

[1 Jul 2018 – 15 Jul 2018]

Scientific summer practicum:

- Assisted in the care, handling, and restraint of animals during medical examinations, surgeries, and treatments
- Conducted basic lab tests, such as analysing blood or urine samples under supervision
- Performed injections

 **Gartenwelt Platter** – Appiano sulla Strada del Vino, Italy

City: Appiano sulla Strada del Vino | Country: Italy

Landscape gardener

[20 Jul 2018 – 30 Aug 2018]

Summer job:

- Assisted in implementing garden layouts for newly constructed homes
- Participated in trimming hedges, pruning trees, and general maintenance of residential gardens, improving plant health and garden appearance.
- Helped in planting trees, shrubs, flowers, and grass in various residential projects, following landscaping plans and soil preparation techniques.
- Operated gardening tools and equipment like hedge trimmers, lawnmowers, and irrigation systems.

LANGUAGE SKILLS

Mother tongue(s): German | English

Other language(s):

Italian

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Spanish

LISTENING B2 READING B2 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Scientific

Machine Learning / RAG / Python / Matlab / LaTeX / Julia / TypeScript / Wolfram Mathematica

Web technologies/IT

AEM / Wordpress / Git / Docker / HTML5, CSS, Javascript / React

Other

Microsoft Office (Outlook, Excel, Word, PowerPoint)

Creative

Adobe (Adobe Photoshop, Adobe InDesign, Adobe Illustrator, Adobe Premiere, Adobe XD) / Capture One / DAW (Ableton, FL Studio) / Blender

DRIVING LICENCE

Driving Licence: AM

Driving Licence: A1

Driving Licence: B

CREATIVE WORKS

[1 Jan 2016 – Current]

Electronic music producer and DJ

- I have produced and released my own electronic music since 2016, and have recorded, produced, mixed and mastered songs for singer/songwriters and bands.
- I have DJ'd at bars, clubs and outdoor parties in Italy, Germany, The Netherlands and Spain.
- I've been the sound engineer at live shows for bands and electronic acts.
- I organised a series of party events for 100+ people, where I coordinated a team of bartenders, caterers, DJs and light engineers and accountants to enable a smooth and enjoyable night for everyone.

Links: https://soundcloud.com/sandor_00 | <https://open.spotify.com/artist/2r7ZEr7KTMdxpjJAeTMxuM?si=7k4jha3iRymO43RpIghUA> | <https://www.youtube.com/@sandor8456>

CONFERENCES AND SEMINARS

[6 Dec 2023 – 8 Dec 2023] Amsterdam - CWI

Workshop - Scientific Machine Learning (Semester Programme)

- Participated in an intensive three-day workshop on Scientific Machine Learning, organized by CWI, 4TU, and AMI
- Engaged with cutting-edge topics in scientific computing and machine learning, including:
 - Physics-informed neural networks and closure models
 - Gaussian process learning of nonlinear dynamics
 - Deep learning in life science applications
 - Machine Learning Approaches for Model Identification in Agriculture Systems
 - Explainable AI and interpretable machine learning models
 - Structure-preserving machine learning for dissipative systems
- Attended keynote lectures by renowned experts:
 - Jan Hesthaven on neural networks as closure models
 - Benjamin Sanderse on structure-preserving learning of embedded closure models
 - Stefania Fresca on deep learning and reduced order modeling in life science applications
 - Sander Bohté on Towards interpretable RANS modelling using Predictive Neurons
 - Gijs Mishra on mathematical and computational theories for machine learning
 - Arno Solin on Learning what photons are made of
 - Kristof Schütt on Backpropagation and Nonsmooth Optimization for Machine Learning
 - Dirk Hartmann on Scientific Machine Learning in the Context of the Digital Twin
- Participated in panel discussions and poster sessions, fostering collaboration with international researchers
- Gained insights into practical applications of scientific machine learning in various domains, including digital twins and large-scale systems

Link: <https://www.cwi.nl/en/events/cwi-research-semester-programs/workshop-scientific-machine-learning-semester-programme/>

PUBLICATIONS

[2025]

FAILS: A Framework for Automated Collection and Analysis of LLM Service Incidents

Large Language Model (LLM) services such as ChatGPT, DALL·E, and Cursor have quickly become essential for society, businesses, and individuals, empowering applications such as chatbots, image generation, and code assistance. The complexity of LLM systems makes them prone to failures and affects their reliability and availability, yet their failure patterns are not fully understood, making it an emerging problem. However, there are limited datasets and studies in this area, particularly lacking an open-access tool for analyzing LLM service failures based on incident reports. Addressing these problems, in this work we propose FAILS, the first open-sourced framework for incident reports collection and analysis on different LLM services and providers. FAILS provides comprehensive data collection, analysis, and visualization capabilities, including:(1) It can automatically collect, clean, and update incident data through its data scraper and processing components;(2) It provides 17 types of failure analysis, allowing users to explore temporal trends of incidents, analyze service reliability metrics, such as Mean Time to Recovery (MTTR) and Mean Time Between Failures (MTBF);(3) It leverages advanced LLM tools to assist in data analysis and interpretation, enabling users to gain observations and insights efficiently. All functions are integrated in the backend, allowing users to easily access them through a web-based frontend interface. FAILS supports researchers, engineers, and general users to understand failure patterns and further mitigate operational incidents and outages in LLM services. The framework is publicly available on <https://github.com/atlarge-research/FAILS>.

Authors: Sándor Battaglini-Fischer, Nishanthi Srinivasan, Bálint László Szarvas, Xiaoyu Chu, Alexandru Iosup | **Journal Name:** Companion of the 16th ACM/SPEC International Conference on Performance Engineering | **Publisher:** ACM (Association for Computing Machinery)

<https://doi.org/10.1145/3680256.3721320>

Link: <https://arxiv.org/abs/2503.12185>