

# Martin Sedláček

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## EDUCATION

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- University of Amsterdam** 2023 – 2025  
*MSc. Artificial Intelligence* Amsterdam, NL
- **Cum Laude** (*expected*) (Mark: 8.2/10.0 | GPA: 4.0/4.0)
  - **ELLIS Honours** Research Programme & Scholarship (~5% of students).
- Birkbeck College, University of London** 2022 – 2023  
*GDip. Mathematics* London, UK
- **Distinction** (Mark: 74/100 | GPA: 3.75/4.0)
  - Evening studies while working full-time - completed in one year instead of typical two.
- Queen Mary University of London** 2018 – 2022  
*BSc. Software Engineering* London, UK
- **First Class Honours** (Mark: 86/100 | GPA: 4.0/4.0)
  - Received the “**EECS Final Year Prize**” for outstanding academic achievement (ranked **top 5%**).
  - Fully funded by a software engineering [degree apprenticeship](#) with Goldman Sachs (<1% acceptance rate).

## PUBLICATIONS

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- L. Fletcher\*, R. van der Klis\*, **M. Sedlacek\***, S. Vasilev\*, and C. Athanasiadis. “Reproducibility study of ‘LICO: Explainable Models with Language-Image Consistency’”, *TMLR + MLRC at NeurIPS, 2024*. [\[link\]](#)
- **M. Sedlacek\***, A. Vozikis\*, P. Bartak, L. Cadigan, and M. Guo. “Equivariant diffusion for molecule generation in 3D using consistency models”, *GRaM Workshop at ICML (Blogpost Track), 2024*. [\[link\]](#)

## ONGOING WORKS

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- P. Yefanov, **M. Sedlacek**, V. Petrik, and J. Sivic. “Benchmarking the Generalization Capabilities of offline Reinforcement Learning methods for Robotic Manipulation”. [*In preparation for RA-L*]
- V. Yugay, **M. Sedlacek**, F. Six Dijkstra, D. Canez, F. Shi, K. Szewczyk, and M. R. Oswald. “LV-SLAM: dense monocular SLAM leveraging features from pre-trained large vision models”. [*In preparation for ICCV 2025*]

## RESEARCH EXPERIENCE

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- ELLIS Unit Prague (CIIRC CTU)** 07/2023 – Present  
*IMPACT - Intelligent Machine Perception* Prague, CZ
- Starting a thesis on **foundation models in robotics**, advised by [Josef Sivic](#), [Vladimir Petrik](#), and [Cees Snoek](#).
  - Set-up re-usable ‘plug-n-play’ policy training and evaluation pipelines in simulation with ManiSkill and Lightning.
  - Implemented Google’s **RT-1** model in torch and ran large-scale behaviour cloning experiments.
  - Helped with designing a **generalization benchmark**, writing the paper, and code for testing **Diffusion Policy**.
- University of Amsterdam** 09/2023 – Present  
*Projects with AMLab, VISLab, and CV Group* Amsterdam, NL
- Modified an **Equivariant Diffusion** Model for 3D molecule generation and trained it in the ‘**Consistency Model**’ paradigm to speed up sampling. Also helped with a JAX implementation that achieved a further speed-up.
  - Co-authored a **reproducibility study of an explainability method**. I was involved in finding and fixing errors and inaccuracies in the original codebase, analyzing conflicting results, implementing missing parts of the experiment (e.g. saliency maps with Grad-CAM), and designing new experiments to re-evaluate the proposed method.
  - Ongoing work on a **SLAM pipeline leveraging large vision models** with the CV Group.
- Queen Mary University of London** 09/2021 – 05/2022  
*Undergraduate Thesis Project* London, UK
- Project on *benchmarking SOTA models for unsupervised time-series anomaly detection* against density-based and statistical baselines on financial time-series data. I was supervised by [Anthony Constantinou](#).
  - Implemented and trained 4 methods (e.g. auto-encoder and GAN-based) proposed by recent papers at the time using PyTorch. I also coded some of the statistical baselines from scratch with numpy and R.

## PROFESSIONAL EXPERIENCE

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### Palantir Technologies

09/2022 – 04/2023

Software Engineer

London, UK

- Co-led the development of a new 'labels' feature for Apollo - Palantir's autonomous deployment platform.
- Created new back-end APIs for multiple services and increased the performance of existing APIs by integrating batch request processing and improving the speed / frequency of queries to an internal transactional database.
- Support and on-call duties - resolving pressing issues, fixing bugs, building observability tools and useful metrics.

### Amazon.com

06/2022 – 09/2022

Software Development Engineer (Internship)

Berlin, DE

- Improved understanding of how personalized recommendations in Amazon Music are orchestrated end-to-end by building new observability tooling. Mainly worked with cloud infrastructure using AWS, CDK, and TypeScript.
- Participated in paper reading groups with the team's Applied Scientists and attended several ML workshops.

### Goldman Sachs

09/2018 – 05/2022

Software Engineer (Degree Apprenticeship)

London, UK

- Implemented rapid auto-scaling for CI/CD pipeline job runners, reducing AWS resource costs by around 70%.
- Optimised speed and throughput of a messaging system for sending job requests to production services by adopting a new protocol and enabling batch requests, decreasing response time on relevant support tickets by up to 90%.
- Built a tool used by 100+ engineers for automating SSH logins, updating certificates, log retrieval, and other tasks.
- Created an instance health monitoring tool with metric collection, automated alerts, and false positive prevention.
- Learned GO and built a light Python wrapper and dashboard for collecting data used for reducing technical debt.
- Lead a team of 5 to win *1st place* at an internal hackathon by prototyping an ARIMA forecasting model running in the 'ClearFactr' modelling platform and integrating this with our custom portfolio management dashboard.

## RELEVANT COURSEWORK

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### Machine Learning<sup>†</sup>

Optimization  
Information Theory  
Probabilistic Models  
Approximate Inference  
Causality

### Deep Learning<sup>†</sup>

Neural Network Optimization  
Fundamental architectures and principles  
Generative Models (e.g. VAE, Diffusion)  
Foundation Models and Multi-Modality  
Geometric Deep Learning

### Computer Vision<sup>†</sup>

SLAM & Structure from Motion  
Large Vision Models  
Object detection and tracking  
Transformations & Geometry  
Classical CV methods

### Other Topics in AI<sup>†</sup>

Reinforcement Learning  
Natural Language Processing  
Logic & Reasoning  
Information Retrieval  
Privacy, Fairness, Ethics

### Mathematics\*

Probability Theory  
Statistics  
Linear Algebra  
Calculus & Analysis  
Group Theory

### Computer Science\*

Data Structures & Algorithms  
Operating Systems  
Database Systems  
Big Data Processing  
Computer Systems & Networks

<sup>†</sup>MSc. level    \*BSc. level    Grade **A** or **4.0** equivalent in all relevant courses.

## SKILLS

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### Technical (ML/AI)

Torch, Lightning, numpy  
HPC (CUDA, ROCm)  
Multi-GPU training  
Docker/Singularity  
Familiar with JAX, TF

### Research

Experiment Design  
Technical Writing  
Data Visualization  
Project Management  
Teamwork & Communication

### Software Engineering

Python, Java, SQL, R  
Linux, AWS, GCP  
Systems Design, Programming Principles  
Debugging, Problem Analysis, etc.