

# Marek Galovič

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## Work Experience

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### Pinecone Systems, Inc.

Israel/United States

STAFF SOFTWARE ENGINEER

Nov. 2021 - Present

- Developed algorithms for vector search on billions of items.
- Designed and led the development of a new storage engine to support low-latency vector search use cases.
- Low-level optimizations - SIMD kernels, custom data structures, etc.
- Contributed to rewriting Pinecone's codebase to Rust.

### Artificial Intelligence Center at CTU in Prague

Prague, Czech Republic

UNDERGRADUATE RESEARCHER

Mar. 2019 - Sep. 2021

- Reinforcement learning for multi-agent games with imperfect information.
- Applications of adversarial machine learning in the cybersecurity domain.

### Shopify Inc.

Ottawa, Canada

DATA SCIENTIST - CONSULTANT

Jun. 2019 - Sep. 2019

- Explored applications of evolutionary optimisation algorithms for warehouse resource allocation.

DATA SCIENTIST

Nov. 2016 - Sep. 2018

- Applied recurrent neural networks with attention to improve financial time series forecasting.
- Worked on fraud detection models and helped to build real-time inference pipeline.
- Championed and helped to build Shopify's deep learning platform.

SOFTWARE ENGINEERING INTERN

Jun. 2016 - Oct. 2016

- Full-stack engineer on Shopify's core team.
- Contributed to streaming data pipelines for real-time analytics.

### Freelancer

Slovakia

SOFTWARE DEVELOPER

Jul. 2014 - Feb. 2016

- Worked on the back-end of various CRM and e-commerce applications as a part-time software developer during high school.

## Education

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### Czech Technical University in Prague

Prague, Czech Republic

BSC IN ARTIFICIAL INTELLIGENCE AND COMPUTER SCIENCE

Sep. 2018 - Jun. 2021

- First-Class Honours, A - 1.19 (Top 5%)
- Thesis: Representation Learning and Adversarial Sample Generation for Strings
  - Supervisor: doc. Mgr. Branislav Bošanský, Ph.D.
  - Advisor: Mgr. Viliam Lisý, MSc., Ph.D.
- Took graduate courses on machine learning, evolutionary optimisation algorithms and cognitive systems

### High School of Electrical Engineering in Presov

Presov, Slovakia

HIGH SCHOOL DIPLOMA

Sep. 2012 - May 2016

- Achieved the highest grade in all areas of study
- Primary focus of my studies was maths, programming and computer networks

## Publications

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NeurIPS 2021

M. Galovic, B. Bosansky, V. Lisy: Improving Robustness of Malware Classifiers using Adversarial Strings Generated from Perturbed Latent Representations. *NeurIPS 2021 Strategic ML Workshop*

## Research Interests

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- Artificial Intelligence • Machine Learning • Reinforcement Learning • Multi-Agent Systems • Databases

## Open Source

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- **AnnDB** - Distributed Approximate Nearest Neighbours Database
- **Optfolio** - Multi-Objective Portfolio Optimisation using Evolutionary Algorithms
- **QMIX+SC2 on RLlib** - Implementation of QMIX in the StarCraftII environment on RLlib
- **JamesBot** - Goal-Oriented Conversational Agent
- **Othello RL** - Self-Play Reinforcement Learning in Othello (Reversi)
- **Radixt** - A fast, memory efficient radix tree implementation in Rust

## Awards

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- 2019-21 **CTU Scholarship** - Merit-based scholarship awarded for excellent academic achievement
- 2016 **Lux Mentium** - Exceptional study results and representation at national competitions
- 2016 **SPSE-PO Award** - Exceptional study results and representation of the school
- 2016 **1st** - Slovak Science & Technology Festival - Education Software
- 2015 **3rd** - National High School Technical Competition - SaaS Recommender System
- 2015 **2nd** - Junior Internet - SaaS E-Commerce Solution

## Certifications

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- 2021 **IELTS Academic** - Overall Score 8.5 (CEFR C2)
- 2016 **Coursera** - Machine Learning by Stanford University

## Computer Skills

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- **Programming:** Python, Rust, Go, C++, Julia, Java, Ruby, Haskell
- **ML frameworks:** PyTorch, Tensorflow, JAX, Ray
- **Data processing:** Apache Hadoop, Apache Spark, Apache Kafka
- **Databases:** MySQL, Postgres, Apache Cassandra, MongoDB
- **Other:** Git, Docker, gRPC, Raft, Apache Zookeeper, Kubernetes