

Alexey Gronskiy

ML Software Engineer / Engineering Manager / TLM

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Profile

As a mathematician, computer scientist, and engineering leader, I have dedicated my career to the advancement of artificial intelligence through both research and practical application. My experience ranges from developing state-of-the-art machine learning systems for code analysis and aviation safety to leading teams in the full cycle of AI product development.

Areas of expertise: ML for automatic vulnerability fixing ([Snyk DeepCode AI Fix](#)) – Low-memory and low-latency model optimization (quantization, pruning, distillation) – Computer vision for autonomous flight ([Daedalean's Spotter](#)) – Industrial ML research ("[Fixing security vulnerabilities with LLMs](#)", co-author) – Data engineering and orchestration – NN verification and certification ("[Concepts of design assurance for NNs](#)", co-author) – Engineering management, team growth, mentoring.

Experience: 9 years industry (Software Engineering & Management) and 6 years academia (PhD from ETH Zurich, Computer Science)

Skills, Frameworks and Stacks

- **Main languages:** C++, Python, Go
- **Build & CI/CD:** Bazel, Pantsbuild, CircleCI, Github Actions
- **ML Training:** PyTorch, Tensorflow, DeepSpeed; Determined AI, Weights & Biases, Vertex AI
- **ML Serving:** HuggingFace, ONNX, BitsAndBytes/Optimum
- **ML Sub-areas:** Transformers, U-Nets, ResNets, VAEs; Quantization/Pruning
- **Cloud:** GCP/AWS, GCS/S3, Firebase
- **Data & Formats:** PostgreSQL, Redis, MongoDB, Parquet, Kafka
- **Deployment & Balancing:** k8s, Helm, Terraform, Envoy, Docker
- **Observability:** Datadog, OpenCensus, Prometheus, Grafana
- **Org:** Phabricator, JIRA, UML/C4
- **DevEx:** Git, Mercurial, Bazaar, NeoVim, \LaTeX

Professional Experience

Engineering manager (ML team) [Snyk](#) ([snyk.io](#)) **Zurich, Switzerland** 06/2023 – present

- Drove the launch of [Snyk DeepCode AI Fix](#) from Beta to GA ([announcement](#)) via a series of steady model improvements and closing the product-train-eval feedback loop.
- Oversaw development of in-house data labelling service and launched labelling collaborations with external parties, improving the automated fix coverage from 1 to 7 programming languages, and increasing the quality by 20%.
- Oversaw transition of ML train/eval and crawling pipelines to automated KubeFlow cloud, speeding up the release and experimentation from days to hours.
- Developed services for hosting company-wide ML hackathons and label-a-thons. Implemented event-streaming service for large-scale analytics of DeepCode AI Fix.
- Led and grew a team from 3 to 7 engineers; advised MSc theses (jointly with ETH Zurich).
- **Skills & Stacks:** C++17/20 (for serving), Python/PyTorch/ONNX (for deep learning stack), Go (for LSP), Bazel, Kafka, k8s (GKE/EKS), Helm, Envoy, Docker; production cycle, requirements management, mentoring, people management.

Senior ML SWE, Tech lead [Snyk](#) ([snyk.io](#)) **Zurich, Switzerland** 04/2021 – 06/2023

- Core participant of Beta launch of [Snyk DeepCode AI Fix](#); created the initial PoC of a later productionized [Snyk Code Custom Rules](#).
- Built the infrastructure for training/evaluation and serving of LLMs for code repair and search (real-time inference of 3B+ models). Designed and built internal libraries for simplified storage of various artifacts over any S3-compliant storage.
- Brought in codebase best practices, test-driven development, scaled the experimentation.
- **Publications:** "[DeepCode AI Fix: Fixing Security Vulnerabilities with Large Language Models](#)" ([arXiv](#)).
- **Skills:** C++17/20, Bazel; Python/Pytorch/ONNX; Go; k8s (both GKE/Amazon EKS), Helm, Envoy, Docker; Language Server Protocol; Weights & Biases; program analysis.

Senior data engineer [SIX Banking Services](#) ([six-group.com](#)) **Zurich, Switzerland** 12/2020 – 02/2021

- Founding role in a newly established data science unit. Organized technical stack, code review and other processes.
- Performed analytical support of stakeholder business units, provided analysis and computed KPIs for ongoing projects in payment ecosystems.
- Participated in preparatory work for transition to cloud pipelines.
- **Skills:** Python, Geospatial analysis, Microsoft Azure (Data Factory, DataLake, Databricks), JFrog Artifactory, data security and compliance.

Machine learning & computer vision engineer [Daedalean AI](#) ([ddln.ai](#)) **Zurich, Switzerland** 06/2018 – 10/2020

- Prototyped real-time visual air-to-air object detection and tracking system, currently Daedalean's core product ([Daedalean's Spotter](#)).
- Designed and built in-house model evaluation framework which allowed to automate the release cycle and ablation experiments.
- Shaped out data acquisition and annotation strategies. Defined evaluation metrics, navigated aviation industry standards on operational performance. Supervised interns/MSc students. Carried out flight tests as a fixed-wing aircraft pilot.
- **Publications:** (with European Aviation Safety Agency) "[Concepts of Design Assurance for Neural Networks](#)" ([Published by EASA](#)).
- **Skills:** C++14, Python, Tensorflow, Git, object detection and tracking, cloud computing and automation (GCP/KubeFlow/Jenkins), technical ownership, requirements design, product development cycle.

- Engineering intern** *Google, Research & Machine Intelligence* **Zurich, Switzerland** 05/2017 – 09/2017
- Worked on answer ranking module for active question reformulation project. Developed several deep learning models for answer ranking.
 - **Blog post:** “Open Sourcing Active Question Reformulation with Reinforcement Learning” ([Google AI blog post](#)).
 - **Skills:** Python, C++11, Blaze (Bazel), Tensorflow (v1), NLP, experimental design, MapReduce (Flume).
- Software engineer** *ABBYY Software ([abbyy.com](#))* **Moscow, Russia** 04/2010 – 08/2012
- Worked on a framework ([ABBYY Compreno](#)) for automated native language understanding and translation. Designed, developed SDK wrappers for language morphology analysis and text classification.
 - **Skills:** C++03, C#, COM/COM+/WinAPI, SVN, interface design, internal libraries, UML.
- Freelance C++ developer** **Moscow, Russia** 2008 – 2011
- Developed a cross-platform (Mac/Linux/Windows) tool for photo management, sold and maintained it with multiple publishing houses ([archive GitHub](#)).
 - **Skills:** C++03, Qt 4, MercurialHg, PostgreSQL.

Education

- PhD in Computer Science** *ETH Zurich, Dept. of Computer Science, ML Group* **Zurich, Switzerland** 2012 – 2018
- Conducted research in theoretical ML (discrete optimization under uncertainty).
 - Launched medical collaborations with University Hospital Zurich.
 - Supervised several MSc theses.
 - Taught “Introduction to Machine Learning” and “Statistical Learning Theory” courses, created a script for the latter.
 - **Thesis:** “Statistical Mechanics and Information Theory for Approximate Robust Inference” ([ETH Dissertation](#))
- Specialist in Mathematics** *Moscow State University, Dept. of Mathematics and Mechanics* **Moscow, Russia** 2006 – 2011
- Specialist (equiv. BSc + MSc) degree in Pure and Applied Mathematics, with Honors.
 - **Thesis:** “On some metrical properties of Boolean functions” (<https://gron.sk/msc-thesis>)

Volunteering

- Firefighter, Emergency Medical Technician** *Zurich Fire & Rescue Service* **Zurich, Switzerland** 2014 – 2021
- Regularly trained as an ambulance assistant (EMT).
 - Participated in ambulance shifts during public events in the city of Zurich.
 - Was a first responder to alarms from large-scale emergencies.

Hobbies and Other

- Privat Pilot Licence
- Sports (running, cycling, karate)
- Music (flute & guitar)
- Technical blog ([gronskiy.com/posts](#))

Languages

- **Russian** [Native]
- **English** [Fluent]
- **German** [Fluent, C2, Goethe]
- **French** [Fluent, C1, DALF]