

# 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:** 8 years industry (Software Engineering) and 6 years academia (PhD, 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 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
- **Dev:** Git, Mercurial, Bazaar, NeoVim,  $\LaTeX$

## Professional Experience

- Engineering manager (ML team)** *Snyk* ([snyk.io](#)) **Zurich, Switzerland** 06/2023 – present
- Driving the launch of [Snyk DeepCode AI Fix](#) from Beta to GA 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 moving of ML train/eval and crawling pipelines to automated KubeFlow cloud, speeding up the release cadence.
  - Developed services for hosting company-wide ML hackathons and label-a-thons.
  - Led and grew a team from 3 to 6 engineers; advised MSc theses (jointly with ETH Zurich).
  - **Skills & Stacks:** C++17/20 (for serving/engine), Python/PyTorch/ONNX (for NLP/LLM), Go (LSP), Bazel, k8s (GKE/Amazon 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
- Beta-launched products for automatic vulnerability remediation and code search ([Snyk DeepCode AI Fix](#)), including serving architecture and implementation; worked in a squad across the division set the technical directions, roadmaps and priorities.
  - 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 1.x, 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, presentation skills.

## Education

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- 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

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- 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

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

## Languages

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