Alexey Gronskiy

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Summary

Mathematician by training, computer science PhD, with experience in both corporations and 1 ies

	startups, I worked in rang range of fields from com am a private pilot and pa are systematism and clea of years industry (Softwork) 6 years academia (Ph. 1995).	ge of roles from software puter vision for airborne ramedic assistant in my ar communication. vare Engineering)	e en e co fre	ningeering to data and ollision avoidance to fi	ML engineering, and in nancial data analysis. I velopment, my priorities dence permit ("C")			
	Skills Listed below are the skills split into "fresh" and "past" ("secondary") ones. The latter can be brushed up quickly.							
"Fresh"	Areas of activity							
	 Machine learning, deep learning Computer vision for autonomous flight Object detection, collision avoidance Simulation and real data fusion Large scale data analysis, ETL pipelines 		 Neural networks verification and certification Code review and documentation process Navigating regulatory standards MSc/BSc theses advisory 					
	Operating programming languages							
	○ C++	Python		o Go				
	Software frameworks							
		gRPC/RESTPandas, Geopandas		Scikit-learn, PyMC3 Networkx, OSMnx	O Plotly, Dash, FoliumO Flask			
	Stacks & Tools							
	 CI/CD: Bazel, Jenkins, Docker, Git, Arcanist Packages: Nix, JFrog Artifactory, Anaconda Data: Hadoop MapReduce, Spark, Parquet [No]SQL: Redis, MongoDB, MariaDB 		 GCP: Storage, Computing, KubeFlow Azure: Databricks & DataLake, DevOps Training: Determined AI, CUDA Organizational: Phabricator, JIRA, Confluence 					
"Past" and "Secondary"	Areas of activity							
	 Natural Language Processing Question reformulation, morphological analysis Statistical Learning Theory Algorithmic robustness under uncertainty 		Teaching assistanceExternal API design for SDK productsCross-platform UI developmentDatabase normalization analysis					
	Programming languages & Software frameworks							
	,	○ C# ○ Qt4		MATLAB OpenMP	HTML/JS/CSSHugo/Jekyll			
	Stacks & Tools							
	 CI/CD: Google's Blaze, Mercurial, Bazaar, SVN, various internal code review tools 		Cloud: Google's BorgOrganizational: UML					

O Typesetting: LATEX

O Data: Apache Beam, RabbitMQ

O Databases: MySQL, PostgreSQL

Working Experience

2020–2021 Senior data engineer, SIX Banking Services, Zurich, Switzerland



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

2018-2020

Machine learning & computer vision engineer, Daedalean AI (ddln.ai &), Zurich, Switzerland



- Conceived and developed a prototype of a visual air-to-air object detection and tracking system (as part of autopilot collision avoidance).
- O Researched, evaluated and made early technical decisions, shaped out data acquisition and annotation strategies. Developed evaluation metrics, navigated aviation industry standards on operational performance.
- As part of a 4-member team, worked with European Aviation Safety Agency on defining the concepts of safety assurance for neural networks (coauthored gron.sk/codann &, see "Publications").
- O Conceived, developed an extendable and modularized machine learning evaluation and reporting framework used across several projects.
- Co-supervised interns and joint MSc/semester
- Carried out flight tests as a fixed-wing aircraft
- O Skills: C++14, Python, Tensorflow, Git, object detection and tracking, cloud computing and automation (GCP/GKE/KubeFlow/Jenkins), operational performance metrics, technical ownership, requirements design, product development cycle.

summer 2017 Research intern, Research and Machine Intelligence, Google Zurich, Switzerland



- tion reformulation (see Google AI blog post 12).
- O Developed several deep learning models for answer ranking.
- Presented at monthly meeting of Google Research.
- Worked on answer ranking module for active ques Approved for full-time conversion by the hiring committee.
 - Skills: Python, C++11, Tensorflow, NLP, experimental design, MapReduce, communication.

ETH zürich

2012–2018 **Doctoral research assistant, head teaching assistant**, Machine Learning Group, Department of Computer Science, ETH Zurich, Switzerland

- O Conducted research in both theoretical and practical fields (see "Projects" below).
- Launched medical collaborations with University Hospital Zurich (see www.cardioml.ch ぱ).
- Supervised several MSc theses.
- Taught "Introduction to Machine Learning" and "Statistical Learning Theory" courses, created a script for the latter.

2010–2012 C++ software engineer, ABBYY Software, Moscow, Russia

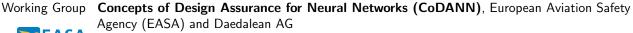


- O Worked on a framework for automated native language understanding and translation.
- O Designed, developed SDK wrappers for language
- morphology analysis and text classification.
- Skills: C++03, C#, COM/COM+/WinAPI, SVN, interface design, internal libraries, UML.

2008–2011 Independent (freelance) C++ developer

- Conceived and developed a cross-platform (Mac/Linux/Windows) tool for photo management, sold and maintained it.
- Skills: C++03, Qt 4, MercurialHg, PostgreSQL, selling and presentation.

Research Projects, Working Groups, Publications and Talks





- Participated in a working group (gron.sk/easa ♂) Co-authored a report "Concepts of Design Assurwhich aimed at establishing methods and concepts for ensuring operational safety of machine learning models in aviation.
 - ance for Neural Networks", whose official summary (gron.sk/codann ♂) was published by EASA.

Research Projects Statistical Mechanical Analysis of Combinatorial Free Energy, ETH Zurich with Center of & Publications Science of Information, Purdue University





- - International Conference on Analysis of Algorithms (AofA) 2017, Princeton
- tion Problems"
 - Analytic Combinatorics (SODA-ANALCO) 2017, Barcelona
- **ETH** zürich o "On Phase Transitions of Free Energy in Combi- o "Free Energy Rates for a Class of Optimization Problems"
 - International Conference on Analysis of Algorithms (AofA) 2014, Paris
 - "Phase Transitions in Parameter Rich Optimiza- O "Asymptotic Evaluation of Posterior Agreement for some Optimization Problems"
 - J. of Theor. Comp. Sci. (TCS) 2018

Robustness and Informativeness of Minimum Spanning Tree Algorithm, ETH Zurich

- rithms"
 - Joint ETH & Google Workshop, Google, Zurich, 2016
- "On Informativeness and Robustness of Algo- "How Informative are Minimum Spanning Tree Algorithms"
 - International Symposium on Information Theory (ISIT) 2014, Hawaii



Machine Learning for Cardiological Diseases (www.cardioml.ch 2), ETH Zurich with University Hospital Zurich and MPI Tübingen, Germany



- tween key factors of Acute Coronary and Takotsubo syndromes.
- O Detecting causal and statistical dependencies be- O Launched and co-led the project initially, supervised BSc and MSc theses.

Robust Solving of Algorithmic Problems, ETH Zurich with Institute of Theoretical Informatics,

o "Robust Optimization in the Presence of Uncertainty: a Generic Approach" J. of Computer and System Sciences (JCSS) 2018

Education

ETH zürich

2012–2018 Doctoral degree (Dr. Sci. ETH), Machine Learning Group, Department of Computer Science, ETH Zurich, Switzerland

> Ph.D. Thesis "Statistical Mechanics and Information Theory for Approximate Robust Inference" (gron.sk/thesis ♂).

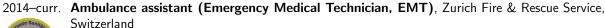
2006–2011 BSc + MSc, Department of Mathematics and Mechanics, Chair of Discrete Mathematics, Moscow State University of M.V. Lomonosov (MSU), Russia

- O Specialist (equiv. BSc + MSc) degree in Pure and Applied Mathematics, with Honors.
- Thesis "On some metrical properties of Boolean functions" (gron.sk/msc-thesis ♂).

Languages

0	Russian	native	○ German	fluent (C	2 Goethe,	2016
0	English	. fluent	French	fluent (C1 DALF,	2011

Volunteer Work





- O Regularly training as an ambulance assistant.
- Participating in ambulance shifts during public events in the city of Zurich.
- O First responder to alarms from large-scale emergencies.

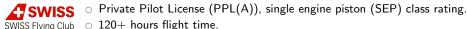
2007–2012 Lecturer/Teacher, MSU-/MIPT-based summer and winter schools ♂ for mathematics and programming, Russia



- Created original lecture/seminar materials.
- Conducted lectures and seminars for high school students.
- O Topics: mathematical analysis, discrete mathematics, programming.

Hobbies and Other Activities

Aviation Pilot, SWISS Flying Club (www.swissflyingclub.ch 2), Hausen am Albis, Switzerland



- SWISS Flying Club 0 120+ hours flight time.
- contests
- Programming O II prize team, All-Russia Programming Contest II prize team, Moscow Programming Contest (2005).
 - (2005).

- Sports & Music O Karate (gold medal in Swiss Spring Kyu- O Alpine skiing and snowboarding. tournament, 2014).

 - O Playing flute, guitar.

Pilot blog Author, Telegram channel "CrossWind Landing" (in Russian) (gron.sk/x-wind 다)



- O Telling the story of learning for private pilot license in Switzerland. O Topics about aerodynamics, meteorology, and the fun of flying.
- Blog Author, Personal blog on range of topics (gron.sk/posts ♂)
 - O Topics: aviation, tech, programming.