

ANDREI V. SMIRNOV, PhD

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Summary Qualifications

Multidisciplinary scientist with over 20 years of experience in software engineering and computer science, including statistical methods, predictive analytics, and workflow optimization. Passion for software development and mathematical modeling. Strong background in implementation of numerical solvers on high-performance computing platforms. Many years of experience in optimisation of data processing pipelines on cloud platforms, system tuning, and administration (RedHat Linux). Performed work on data analysis and modeling of natural text, imagery, and big data processing. Has skills and experience in adapting and utilising machine learning technologies and tools. Developed code for [multi-physics equation solvers](#), [mesh generation](#), [back-propagation](#), pattern recognition, computer vision, [music sequencing](#), and more. Proficient in C++, Go, Python, Java/JS/TS, SQL, Unix shell, and a experience with Rust. Many years of leading projects in R&D and software development, as well as academic advising. Has [PhD in Technical Sciences](#), [RedHat System Administrator License](#), [Linux+ CompTIA Certification](#), [Cybersecurity Analyst Certification \(CySA+\)](#), and [Professional Engineering License](#).

Professional Experience

2025 - PRESENT Sr. Data Scientist / Cyber Security Analyst [Peraton](#) (Agency: [DISA](#))

- Big data analytics (Python, Snowflake, MongoDB).
 - Development and implementation of algorithms for trend analytics based on published reports and other data sources (Python, PostgreSQL/MongoDB).
 - Development of automated cyber mission thread analysis ([CMTA](#), [MTA](#)) and autonomous mission control systems (Python, Java/TS, Node.JS, Rust).
 - Implementation of machine learning and agentic AI (Tensorflow, Pytorch, Python/Java/TS).
 - Networks anomaly detection (C/C++/Go/Python, Linux).
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2020 - 2025 Sr. Data Scientist, [Booz Allen Hamilton](#) (Agency: [NGA](#))

- Development and implementation of algorithms for processing satellite imagery. Identification of characteristic features and objects of interest in image repositories, efficient object recognition and geolocation (Python, Java/JS/TS, C++, [QGIS](#), [GDAL](#), [OpenCV](#)).
 - Adapting and improving algorithms for multi-view stereo processing for 3D reconstruction and classification of objects of interest (Python, Java/JS, C++, [GeoPandas](#)).
 - Optimization of pipelines for processing satellite imagery (AWS, Ansible, [Snowflake](#)/SQL, Bash).
 - Development of pipelines for processing geospatial information (Kubernetes, Ansible, Snowflake, [QGIS](#), [GDAL](#), [GeoPandas](#)).
 - Literature review and bibliography portal development in the areas of quantum computing technologies and natural language processing (PHP, SQL, [MulPhys/bib](#)).
 - Development of ML optimization methods and validation and quantification of NLP performance ([RNN](#), [LSTM](#), [Transformers](#), [NLTK](#), [SpaCy](#)).
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2018-2020: Sr. Software Developer/Consultant, [Ariadne Genomics](#). (Agency: [NLM/NIH](#))

- Development of algorithms for processing medical records (GO, Python, [Cython](#)).
 - Data pipeline optimization (Ansible, [Tensorflow](#), [Keras](#), [Kubernetes](#), [PyTorch](#), SQL).
 - Algorithm development for efficient pattern recognition in unstructured and semi-structured data records, bibliographic data, and databases ([NLM](#) Python/C++, Go, SQL, No-SQL, [NLTK](#)).
 - Optimization of pipelines for data stream processing (Tensorflow, Ansible, [GCP](#)).
 - Software QA and continuous integration (Ansible, [GitLab CI/CD](#)).
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2017-2018: Sr. Product Developer, [Fuelcell Energy](#).

- Development of algorithms for multi-physics modeling (Go, Python, C++).
 - Analysis of industrial systems and data-flow optimization (ANSYS, Python, GO, SQL/NoSQL).
 - HPC cluster maintenance and administration (Linux, Ansible, Bash, Slurm).
 - Software QA and continuous integration (Ansible, [GitLab](#)).
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2014-2017: Sr. S&T Specialist, [Bechtel](#)

- Analysis of data flows and software integration (Java/JS, GO, SQL, Ansible, Docker).
 - Algorithm development for detecting of anomalies in industrial data stream (Python, GO).
 - Modeling and simulation of industrial processes and data streams (GO, Python, C++, [Tensorflow](#), SQL).
 - Automation of continuous software integration pipelines (Ansible, Docker, Bash, [GitLab CI/CD](#)).
 - Development and testing of algorithms for robotic vision (C++, [OpenCV](#)).
 - Software quality assurance and validation (Python, Golang, Ansible, Docker, SQL, Git, Bash).
 - Creating web portal for local code repositories and simulation control (Python, [Django](#), SQL, HTML, Git).
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2008-2014: Advisory Engineer, [B&W](#)

- Leading software development for analysis of industrial systems (C++, Python, Bash, [ANSYS](#)).
 - Process automation and simulation (C++, Python, [ANSYS](#)).
 - Development of algorithms for simulation and monitoring of control data flows (C++, Python, Bash).
 - Automation of software integration pipelines (Python, Ansible, Bash).
 - Leading software validation and verification team.
 - Creating web portal for bibliography and document databases (Java/JS, MySQL, HTML).
 - Creating web-based simulation control interface (Python, [Django](#), HTML)
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1998-2008: Assistant professor, [WVU](#)

- Development of advanced integrated data structures for simulation of complex processes (C++). Sponsored by [DARPA](#).
 - Teaching computational methods and applied mathematical modeling. Advising MS and PhD students.
 - Developing algorithms for high-performance computing (HPC) and Linux cluster administration (RHEL, Bash).
 - Web portal development for research publications (PHP, HTML, SQL).
 - Development of a system for modeling contamination scenarios and statistical predictive analytics [RASAT](#).
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Competencies/Technical Skills

Project management: Agile software development and validation ([GitLab CI/CD](#)).

Mathematical modeling: Strong background in [Linear Algebra](#), [ODE](#), [PDE](#).

Implementation of [physical modeling](#) and [ML algorithms](#).

Platform Competencies: Linux, Docker, [Kubernetes](#), GCP, AWS (S3, EC2).

Software skills: C/C++, Python, Go, Java/JS, Rust, PHP, SQL, UNIX Shell (Bash, Csh, Zsh), PowerShell.

Libraries: [Pandas](#), [PyTorch](#), [Tensorflow](#), [NLTK](#), [SpaCy](#), [OpenNLP](#), [OpenCV](#), [QGIS](#), [GDAL](#), [SciPy](#), [NumPy](#), [Qt](#), [VTK](#).

Publishing: Over [80 technical publications](#).

Education

- MS in Physics with honors from [MSU](#).
 - [PhD in Technical Sciences](#) from [CTH](#).
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Licences & Certifications

- [RedHat System Administrator License](#)
 - [Linux+ CompTIA Certification](#)
 - [Cybersecurity Analyst Certification \(CySA+\)](#)
 - [Professional Engineering License](#)
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Activities

- Professional Societies: [ASME](#), [ANS](#).
- Software on Github ([MulPhys](#)) and Gitlab ([DTM](#)).
- Patents: *Music Machine*. US Patent [8,541,677](#).
- [Nova-Labs](#): software mentor for [FTC robotics competitions](#).
- [James Madison HS](#): software mentor for [FRC robotics competitions](#).
- Designed and maintained websites [MulPhys](#), [Flybotics](#), [Robecs](#), [Tectral](#), [H2GenTech](#), [I-Felt](#), [Games](#).