



Branislav Rabatin, PhD

Data Analyst

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Summary

Data analyst with a background in astrophysics and research computing. I build Python-based data pipelines, validation tools, and analytical reports for complex public administration information systems. My work focuses on API-based data extraction, data quality, metadata validation, reproducibility, and clear reporting. I enjoy turning messy, connected datasets into structured, auditable, and usable outputs.

Skills

- Programming: Python, C/C++, Lua, Java/Groovy
- Data analysis and modelling: data model design, relationship modelling, analysis of linked data sources, graph databases
- Data pipelines and validation: API-based data extraction, data ingestion, data quality checks, validation, filtering, reporting-ready datasets
- Data integration and formats: REST APIs, JSON, JSON-LD, CSV, XML/RDF, open data, data standards, ontologies

Work Experience

Data Analyst, Ministry of Investments, Regional Development and Informatization of the Slovak Republic

(2025–present)

- Designed and implemented **automated data pipelines** for collecting, processing, validating, filtering, and publishing data from **multiple API sources**.
- Developed **data-quality checks** to identify inconsistencies and propose corrections across **public administration information systems**.
- Improved **auditability and reliability** by logging changes, comparing before/after states, and ensuring **reproducible outputs**.
- Modelled and analyzed **entities, attributes, and relationships** in complex **metadata and data models**.
- Generated **automated Excel reports** and analytical outputs with a focus on readability, interpretability, and practical use.
- Prepared **ad hoc analyses** based on detailed knowledge of **underlying data structures**.

Projects

- **ces-export (public GitHub template)**
 - Designed and implemented a **reusable template** for collecting data from the **CES API** for public authorities.
 - Processed **asynchronous API endpoints**, cleaned data, and generated outputs in CSV, RDF, JSON-LD, and XLSX formats.
 - **Automated data collection and processing workflows** that had previously been performed manually.
 - Built the solution as a reusable **template for other organizations**, with follow-up interest in training and adoption.
- **datasets (internal data ingestion system)**
 - Designed a **modular repository** for collecting and processing data from multiple sources.
 - **location**: processed and hierarchically reconstructed territorial data; generated structured CSV and XLSX outputs.
 - **egov**: created analytical reports on public administration services and systems, with emphasis

- Tools: Git, shell scripting, Excel, Mathematica, Inkscape
- Platforms: Linux/Unix, HPC (Slurm), MPI
- Soft skills: analytical thinking, mentoring, teamwork, cross-team communication
- Languages: Slovak native, English C2

on data quality and clear reporting.

- **Graph analysis and diagnostics of Metals**

- Designed diagnostic tools over complete exports from Metals, Slovakia's public administration metadata system.
- Analyzed entities, relationships, data quality, and metadata consistency.
- Generated navigable reports to support quality control of public administration metadata models.

Research Assistant, Florida State University

(2021-2025)

- Researched the statistics of interstellar matter and turbulent plasma.
- Designed and implemented data-processing and computational workflows in C++ and Python.
- Performed statistical analysis of complex turbulent systems and large simulation datasets.
- Published results in international peer-reviewed journals.

Teaching Assistant, Florida State University

(2018-2021)

- Led physics recitation sections and laboratory classes.
- Developed communication, mentoring, and teaching skills.

Institute of Informatics, Slovak Academy of Sciences

(2017-2018)

- Researched disordered superconductors.
- Solved large nonlinear systems and developed numerical algorithms in C++ and Mathematica.
- Published results in a peer-reviewed journal.

Education

FSU – Tallahassee, FL

PhD in Astrophysics, 2025

Dissertation: Statistics of Supersonic Turbulence in the Context of Star Formation and Polarized Dust Emission

Advisor: David C. Collins

Comenius University – Bratislava MSc in Theoretical Physics, 2017

Master's thesis: Superconductivity in systems with weakly screened coulomb interactions

Advisor: Richard Hlubina

Comenius University – Bratislava

BSc in Physics, 2015

Bachelor's thesis: Quantum conductivity and persistent current in a mesoscopic ring

Advisor: Martin Moško

Awards

The Major Michael J. Mills Scholarship in Astrophysics

- “For many outstanding contributions to our understanding of supersonic turbulence”

Selected Publications

“Statistics of Energy in Isothermal Supersonic Turbulence”, Rabatin, Branislav; Collins, David C.; The Astrophysical Journal

“Density and Velocity Correlations in Isothermal Supersonic Turbulence”, Rabatin, Branislav; Collins, David C.; Monthly Notices of the Royal Astronomical Society

“Finite Shock Model of Density in Supersonic Turbulence”, Rabatin, Branislav; Collins, David C.; Monthly Notices of the Royal Astronomical Society: Letters

“Superconductivity in Systems Exhibiting the Altshuler-Aronov Anomaly”, Rabatin, Branislav; Hlubina, Richard; Phys. Rev. B