**Athanasios Stavropoulos**

# **Summary**

# Seasoned Data & Python Engineering Professional with 12+ years of experience spanning financial services, retail, and research environments, specializing in Python development, data architecture, and machine learning applications. Proven expertise in building scalable Python-based solutions for ETL pipelines, anomaly detection, risk modeling, personalization, and AI/ML-driven insights. Adept at leveraging modern tools and frameworks including Pandas, NumPy, Scikit-learn, PyTorch, TensorFlow, Matplotlib, Seaborn, Plotly, PySpark, SQL, and cloud platforms (GCP, Snowflake, Hadoop, Hive).

# Strong track record delivering end-to-end solutions in capital markets, risk & compliance, data science, and predictive analytics—partnering with cross-functional teams to design frameworks that improve decision-making, efficiency, and compliance. Experienced in graph theory, computational mathematics, statistical modeling, and signal processing, applying advanced techniques to business-critical challenges.

# Recognized as a Python Subject Matter Expert with roles as Senior Python Engineer, Python AI Engineer, Data Scientist, and Software Developer—bridging data engineering, advanced analytics, and software development. Academic research background in computational astrophysics and dynamical systems further strengthens quantitative and problem-solving capabilities.

# **Technical Skills**

**Operating Systems**: Unix/Linux, Windows, Mac OS

**Programming**: Python (SciPy, Pandas, NumPy, Matplotlib, Scikit-learn, TensorFlow), SQL (MySQL, Microsoft SQL Server), C/C++, Matlab, R, Wolfram Mathematica, Fortran

**Software**: Microsoft Office, PowerBI, Tableau, ANTLR4

**Special Skills**: Computational Physics, Numerical Mathematics, Machine Learning, AI, Deep Learning, Data Analysis, Statistical Analysis, Cloud Computing, Database Architecture, Generative AI, Marketing

**Web Design**: CSS, HTML5, HTML, XML, JAVASCRIPT

**Other**: GIT, Agile, Jira

**Education**

* PH.D. IN Computational Physics, Georgia Institute of Technology, 2018
* M.S, Computational Physics, Aristotle University of Thessaloniki, 2012

# **Professional Experience**

**Wells Fargo Bank, Incident Prevention Group, Charlotte, NC January 2024 – Present**

**Lead Data Solutions Specialist / Python Machine Learning Engineer**

* Led a project to design and implement a data selection and collection framework for machine learning and Gen AI algorithm development.
* Identified and curated relevant datasets to support predictive modeling of serious incident occurrences, ensuring data quality and integrity.
* Collaborated with cross-functional teams to define project goals, timelines, and deliverables.
* Worked on the creation of accurate predictive models, contributing to proactive risk management strategies.
* Designed and implemented Python scripts for anomaly detection using Graph theory libraries (NetworkX, iGraph).
* Developed Python-based ML models to analyze communication patterns and predict anomalies.
* Leveraged Python for statistical computation, signal reconstruction, and simulation of future behaviors.
* Built visualization dashboards using Python (Matplotlib, Seaborn, Plotly) to communicate insights to stakeholders.

**Bank of America, Corporate Center, EBDM Group, Charlotte, NC Aug 2023 – Dec 2023**

**Senior Data Architect / Python AI Engineer**

* Application of statistical analysis on volumetric data transferred between applications within the bank.
* Application of Machine Learning and AI algorithms on Graph theory models, for the purpose of detecting anomalies in the communication of applications within the Bank.
* Application of computational mathematics methods on reconstructing volumetric signals between applications and prediction of future behavior.
* Developed Python-based data pipelines for preprocessing, feature engineering, and integration with ML models.
* Utilized Python libraries (Pandas, NumPy, Scikit-learn, PyTorch) for data transformation, model training, and validation.
* Automated workflows in Python to enhance reproducibility and reduce manual intervention in model deployment processes.

**Wells Fargo Bank, Charlotte, NC February 2023 – August 2023**

**Senior Python Engineer**

* Develop and enhance code in Python and MySQL to support ETL (Extract, Transform, Load) processes concerning employee hire data.
* Automation of lineage data pipelines for daily and weekly usage.

**Lowe’s Home Improvement, Corporate Office, Charlotte, NC February 2020 – February 2023**

**Data Scientist / Python Software Developer**

* Application of statistical analysis, machine learning, deep learning and AI methods within Google Cloud Platform (GCP) infrastructure to predict the behavior of online customers and personalize their experience (Personalization).
* Application of machine learning models to classify unregistered customers. Creation of a customer ID database for unregistered customers based on customer behavior and their digital fingerprint.
* Development of a rule based model used to predict the re-purchase of periodically replaceable products and application of machine learning classification techniques within this model to promote similar products.
* Develop, enhance and maintain efficient, testable and reusable code to automate collection, analysis and visualization of web traffic data.

**Bank of America, Corporate Center, GRA Group, Charlotte, NC Feb 2018 – Feb 2020**

**Applications Developer / Python Software Engineer**

* Develop, enhance and maintain efficient, testable and reusable code to automate collection, analysis and visualization of model data.
* Collaborate with other software developers to enhance existing processes in Python and SQL to support data usage requirements.
* Develop, enhance, and maintain a Python based internal website and workflows to support reviewing and approving model data usage.
* Design and implement a solution to automate collection, analysis, and visualization of model data.
* Parsing code written in various database management and programming languages.
* Collaborate with other software developers to enhance existing processes in Python, ANTLR4 and C++ to support data usage requirements.
* Translation and enhancement of existing code from Matlab to Python.

**Graduate Research & Teaching Assistant / Python Computational Researcher, Atlanta, GA**

**Georgia Institute of Technology, Center For Relativistic Astrophysics 2013 – 2018**

* Research: Computational astrophysics and numerical general relativity.
* Writing and maintaining code in C/C++, Python, Matlab and Wolfram Mathematica.
* Developing and performing small and large scale computer simulations using the C and C++ programming languages.
* Develop, enhance, and maintain a Python based internal website and workflows to support reviewing and approving model data usage.
* Mathematical analysis and graphical visualization of large data sets using Matlab, Python, Vislt and Wolfram Mathematica.
* Working with the Einstein Toolkit, a community-driven software platform of computational tools for research in relativistic astrophysics.
* Teaching and supervising undergraduate physics labs and programming courses as a graduate teaching assistant.
* Web-page designing using CSS, HTML and XML.
* Machine Learning and Artificial Intelligence.

**Graduate Student / Computational Python Researcher Thessaloniki, Greece**

**Department Of Physics And Computer Sciences, UNIVERSITY OF THESSALONIKI 2009 – 2012**

* Research: Computational study of stochastically perturbed dynamical systems.
* Experience in using various programming languages to present, solve and visualize physics related problems.