Ivan Pogrebnyak

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github.com/ivankp

Technical Skills

PROGRAMMING LANGUAGES: C++ | C | Python | Go | JavaScript | Java | SQL | HTML | PHP | VHDL | Bash

DATA SCIENCE: Bayesian and frequentist statistical methods and algorithms | Monte Carlo simulations (PyMC3, Stan) | Linear, Logistic and Non-linear Regression (Scikit-Learn) | Time series analysis, Structural Time Series (TF Probability) | Hypothesis Testing | Deep Learning/Neural Networks (TensorFlow, Keras) | Unsupervised Learning (Clustering, K-Means, PCA) | Data Processing (Pandas, Spark, Apache Arrow) | Data Mining | Data Visualization (Matplotlib, pyplot, seaborn, Bokeh, D3.js, plotly, highcharts) | Databases (Redshift, Snowflake, Sqlite, libpq) | Jupyter and Mathematica notebooks

SOFTWARE ENGINEERING: Optimization of data analysis sortware | Distributed Computing (AWS: S3, EC2, Redshift, EMR, Lambda; HTCondor) | Web development (REST API Development, Web Design, Server Programming) | CI/CD (Jenkins)

LINUX: Version control (Git, GitHub, SVN) | Shell scripting | System management | System programming

Education

Data Scientist Certification – Fellowship Program | The Data Incubator | Nov 2021

Ph.D. in High Energy Physics | Michigan State University | May 2021

B.S. in Physics & B.A. in Mathematics | University of North Carolina at Chapel Hill | May 2013

Experience

MICHIGAN STATE UNIVERSITY   **Jan 2023 – Present**
Software Engineer

- Full-stack development of web-based data analysis tools using C++, PHP, Javascript, HTML, CSS.

REVELIO LABS   **Jan 2022 – Jan 2023**
Data Scientist

- Provided clients with deliverables prepared using large-scale databases (AWS) and machine learning models.
- Designed and implemented a regularized naive Bayes model for predicting LinkedIn users' skills.
- Redesigned a Bayesian structured time series model from Python to C++ with a factor of 1000 speed-up.
- Developed an optimized caching textual data lookup server in Go for fast data delivery.

MICHIGAN STATE UNIVERSITY, CERN, LARGE HADRON COLLIDER   **Jun 2013 – Dec 2021**
Graduate Research Assistant   https://cds.cern.ch/record/2766569

- Analyzed terabytes of experimental and simulated data to perform state-of-the-art particle physics research.
- Utilized complex constrained maximum likelihood models for signal extraction and uncertainty analysis.
- Implemented algorithms to optimize model parameters and hyper-parameters using numerical methods.
- Used Monte Carlo techniques for physics simulations and statistical tests.
- Enhanced the efficiency and usability of analysis pipelines.
- Designed an idiomatic and efficient framework in C++ for distributed (500 cores) data analysis.
- Refactored data analysis software written in C++ and Python, reducing processing time by factors of 10 to 100.
- Independently learned web development using JavaScript, HTML, CSS, and server programming with PHP and C++.
- Designed and implemented interactive web-based tools that eliminated the need to manually perform recurring data analysis tasks, including visualization, statistical model testing, and optimization of model parameters.
- Worked on embedded electronics upgrades for the ATLAS particle detector, including FPGA programming.

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- Consolidated data from over 50 research works and published a statistical analysis in a peer-reviewed paper.

- Successfully applied non-linear regression models using maximum likelihood and χ^2 methods.

- Designed and ran particle physics and material interaction Monte Carlo simulations.