Matthew Wilchek

Federal Data Scientist (GS-13) | Active Top-Secret Clearance | M.S. Student in George Washington University

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Experienced Data Scientist in the federal law enforcement and intelligence industry with practical experience leading and deploying machine learning, data mining, and data visualization solutions; seeking positions with a machine-learning focus.

Skills

Computer Languages: **Python**, **R**, SQL, Java, C, HTML/CSS, Terraform
Data Visualization: **Rshiny**, **ggplot2**, **Plotly**, leaflet, Matplotlib, Seaborn, Bokeh, Tableau, ArcGIS
Cloud Management: **AWS**, EMR, Spark SQL, Hadoop, EC2, MapReduce, Hive, Pig, S3, GCP
Software: **MS Office**, Slurm, MPI, Git, ArcMap, SceneBuilder, scikit-learn, TensorFlow

Education

2021/05 (est.) **M.S. Data Science — George Washington University, DC**
Core Courses: Deep Learning with Neural Networks, Data Visualization, Parallel Programming, Big Data, High Performance Computing (HPC), Probabilistic Modeling and Statistical Computing, and Datawarehouse Systems

2017/08 **A.S. Computer Science — Northern Virginia Community College, VA**
Core Courses: Linear Algebra, Discrete Mathematics, Calculus/Vector Analysis, Computer Organization, Object Oriented Programming, Data Structures & Analyzing Algorithms

2012/05 **B.A. International Affairs — George Mason University, VA**
Core Courses: Game Theory, Conflict Analysis & Resolution, International Economic Policy, Globalization and Culture, Government and Politics of the Middle East and North Africa, Government and Politics of Europe

Work Experience

Current
November, 2017

DHS – Immigration Customs Enforcement (ICE), Data Scientist (GS-13), Washington, DC

- Lead and drive a 11 contractor personnel team in complex data modeling, mining, visualization and other related data science initiatives around the immigration lifecycle
- Support development of advance web-based business intelligence dashboards, mobile applications for officers, ETL processing scripts, and database management scripts using Python, R, Java, Swift, SQL, and Tableau
- Facilitate data science methodology training and experimentation with new supervised and unsupervised machine learning algorithms (tensorflow, keras, Scikit-learn)
- Develop and evaluate various algorithms for automating criminal intelligence reports for investigative case support of federal officers/special agents

R | Python | Machine Learning | Data Visualization

November, 2017
November, 2016

U.S. Census Bureau, Geographer (GS-11), Suitland, MD

- Developed programs in Python to ingest and analyze large geo-spatial data sets
- Performed exploratory data analysis (EDA) with R statistical computing and SQL
- Assisted the Hidden Unit Task Force with the identification of hidden housing units for 2020 enumeration by utilizing near- infrared (NIR) imagery and Light Detection and Ranging (LiDAR) imagery, and ArcGIS Python Arcpy scripting
- Queried and updated the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) database and the Geographic Acquis-based Topological Real-time Editing System (GATRES)

R | Python | Machine Learning

November, 2016
October, 2015

USDA – Foreign Agriculture Service (FAS), International program Specialist (GS-7), Washington, DC

- Acted as the primary technology liaison/business analyst for the Disaster Assistance division's Office of the Director
- Designed and executed analytical reports from various databases of global agricultural data to be integrated to a Geographic Information System (GIS), including big data sets, using various programming languages such as Java, JavaScript, HTML, and QML
- Assisted in a streamlined data integration of the USDA FAS's Grantor management system and FAS's SharePoint workspace to allow the flexibility of big data tracking, analytics, and enterprise searching

October, 2015 – May, 2012 | Northrop Grumman Corp., Competitive Intelligence Analyst, McLean, VA

- Supported the international business development team in providing competitive and market intelligence that influenced strategies to support business winning goals of the Air and Missile Defense division
- Design and implement content updates such as guidance and advisories to financial institutions on FinCEN.gov, 314a Financial Regulators web site, and the FinCEN Registered User Portal used by all domestic law enforcement agencies
- Assisted Senior Solution Architects with the development of open-source intelligence (OSINT) analytical software by performing operational research, planning analysis, and financial intelligence (FININT) analysis such as predictive analytics
- Lead the design and development of a Project Management Portal that followed a standardized project management framework based from the Project Management Institute (PMI) on Microsoft SharePoint for the National Oceanic and Atmospheric Administration (NOAA)

Data Visualization | R shiny | ggplot | plotly | HTML | CSS

May, 2012 – May, 2011 | U.S. Treasury – Financial Crimes Enforcement Network (FinCEN), Intelligence Analyst, VA

- Researched, analyzed, collected and produced financial intelligence data and reports using various data collecting systems such as TECS, Lexis-Nexus, and SAS
- Studied trends and patterns, assisted in identifying intelligence gaps on global financial transactions activities in support of the prevention of financial crimes with senior intelligence analysts; including krypto- currency trends such as bitcoin
- Wrote over 20 investigative reports on foreign politically exposed people suspected of money laundering or terrorist financing by analyzing BSA data

R | Data Visilization | Time Series

Research Projects

December, 2018 – October, 2018 | Predicting the Stock Market

- Developed custom web scraping scripts using python, Reddit API, and Google Maps API for data collection
- Discovered previously unknown patterns and trends from collected data using advanced data mining methodologies, feature engineering analyses, and intuitive data visualization presentations
- Developed machine learning algorithms for time-series forecasting using python, then tuned the best fit model with regularization
- Created a final web site application using R shiny to summarize the data analysis life-cycle performed and lessons learned

Python | Data Mining | Machine Learning | Data Visualization | Web development

December 2017 – October 2017 | Cellular Automata Model Simulation with Malware Propagation

- Developed a cellular automata model in python that simulated the propagation of infected Bluetooth mobile devices and then measured the spread and diagnostic speed of the devices
- Structured the simulation algorithm to be executed on the Colonial One super computer (350k cores) from George Washington University using parallel programming techniques
- Communicated results through executive briefings using interactive visualizations from R statistical programming libraries such as ggplot2 and plotly

Python | Data Mining | Machine Learning | High Performance Computing

Other Trainings

- 2018-2019: Tableau Desktop and Oracle OBIEE certification training
- 2016-2017: Geo-spatial Intelligence development and analysis training by the National Geo-Spatial Intelligence Agency (NGA) and Esri
- 2015-2016: Project Management Professional (PMP) Certification training