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## Experience

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### Data Intern: U.S. Bureau of Fiscal Service - Office of the Chief Data Officer

June 2023 – March 2024

Data Governance | Data Management | Data Engineering

#### TreasuryDirect Savings Bond Documentation Transfer Automation:

- Fully automated the Treasury savings bond transfer documentation process. This involved **cleaning raw text data**, transferring and uploaded it to an **Access database** on a schedule, saving ~3 hours of daily manual work.
- Generated weekly/monthly **metadata report cycles** which highlighted demographic and buy/sell trends.

#### Data Exchange Metadata Analysis Working Group:

- Spearheaded **comprehensive metadata analyses** on the Bureau's data exchange infrastructure and patterns using Dash & **Power BI** dashboards, **Salesforce** databases, and advanced **KPI, ROI, & opportunity cost metrics**.
- Participated in the Bureau's **data exchange working group** and advocated for the modernization and automation of data strategy through seminars and presentations.

#### Salesforce CRM Ticketing Management:

- Developed a system blending **automated categorization** and human intervention to sort ticket requests efficiently.
- Utilized machine learning **NLP vectorization** methods such as **Doc2Vec** and **TF-IDF**.
- Harnessed **sentiment analysis** techniques to effectively categorize topic, satisfaction, and urgency.

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## Academic Projects

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### San Diego Association of Governments Activity Based Travel Model:

September 2023 – March 2024

- Predicted vehicle choice with the 2017 National Household Travel Survey by using **decision tree, random forest**, and **regression** models to predict each vehicle's type, fuel type, and age.
- Predicted trip destination using SANDAG's synthetic population and census data using a **parameter-tuned decision tree classifier** with an accuracy and **F1 of ~72%** predicting over 240 classes while **decreasing runtime by ~90%**.

### Clothing Size Recommender System:

September 2022 – December 2022

- Fitted an **unsupervised learning algorithm** to predict a RentTheRunway user's most comfortable size based on their clothing reviews.
- Tested a variety of linear and logistic regressions using various summary statistics, with the final **XGBoost regressor** producing a **mean-squared error of 17.91**.

### China Soft Power Expansion Analysis:

June 2022 – December 2022

- Predicted China's future soft power expansion through the lens of IGO voting patterns, natural resources, foreign investment, and trade.
- Cleaned** FDI, import/export, UN voting/speeches, HDI, GDP, and polity data to identify relevant variables.
- Utilized **LDA topic analysis** to compare policy sentiments through UN speeches between different countries.
- A **random forest** model identified countries in Sub-Saharan Africa predicted FDI beneficiaries, which was corroborated by models predicting future UN voting agreement.

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## Education & Certifications

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### University of California San Diego

Data Science Master's Online (Exp. 2026) | Data Science B.S. (Grad. 2024) | Political Science Data Analytics Minor (Grad. 2024)

**Relevant Courses:** Data Structures & Algorithms, Theoretical Foundations for Data Science, Systems for Scalable Analytics, Recommender Systems & Web Mining, Representation Learning, Probabilistic Modeling & Machine Learning, Data Visualization

### AWS Certified Machine Learning Engineer – Associate

October 28, 2024 – October 28, 2027

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## Skills

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**Programming Languages/Software:** Python, SQL, R, HTML/CSS, JavaScript, VBA**Software:** GitHub, Spark, Stata, PostgreSQL, LaTeX, Excel, Jira, Power BI, Salesforce**Libraries:** TensorFlow, PyTorch, SciPy, Scikit-Learn, Dask**Domains:** ETL, Cloud Computing, Agile Software Development, Version Control, Pivot Tables, CRM**Soft Skills:** Curious, Personable, Passionate, Quick Learner, Perfectionist, Completionist

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## Personal

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**Interests:** Avid Music Listener, Advanced Disc Golfer, Poker, Sports Watcher (NFL, NBA), Sports & Political Analytics**LinkedIn:** <https://www.linkedin.com/in/ryan-liao-95a871222/>