# Townsend Saunders III

| Address | Corvallis, Oregon | Website | https://townsend-saunders3.github.io |
|---------|-------------------|---------|--------------------------------------|
| Cell | 480-452-3999 | ChatBot | https://townly.streamlit.app |
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| University of California, Berkeley | College of Engineering | Aug 2015 – Aug 2019 |
|---|---|---|

*Bachelor of Science, Engineering Mathematics and Statistics, Computer Science Focus*
- 1 of 4 graduates.
- Berkeley Undergraduate Scholarship Recipient
- Tim Vorenkamp Award Recipient

| Data Scientist II | Reliance Inc. | Feb 2019 – Sep 2023 |
|---|---|---|

*Inventory Mastering Lead Engineer*
- Built a unified Item Master solution, streamlining inventory management across 50+ subsidiaries and 6 million products, allowing for inventory sharing, improved efficiency, and reduced customer churn.
- Collaborated with stakeholders to deliver a standard inventory labeling system using Agile workflows, Python, Spark (PySpark), AWS tools, and various statistical modeling and Machine Learning techniques.
- Applied NLP techniques such as tokenization, stop word removal, and term frequency-inverse document frequency (tf-idf) to convert industry/company-specific language into concise product descriptions. Employed tools such as NLTK, spaCy, Gensim, Hugging Face Transformers libraries (BERT), and Scikit-learn for stemming, lemmatization, text preprocessing and feature generation.
- Automated real-time model optimization, deployment, and algorithm evaluation via AWS Sagemaker and held the leadership role on a team consisting of internal Data Scientists, Data Engineers, and external Deloitte analysts.
- Wrote rigorous documentation and testing via Python scripts, Jupyter Notebooks, and GitHub for long term code maintenance, explainability, and debugging.

*Anomaly Detection and Predictive Maintenance*
- Spearheaded an anomaly detection system for warehouse machinery, preventing costly breakdowns and hazards.
- Interfaced with supervisors, creating real-time alert systems based on critical telemetry data from 30+ Bosch XDK devices.
- Mentored our Junior Data Scientist on the ins and outs of Machine Learning projects and provided guidance on how to effectively communicate timelines and deliver results.
- Utilized AWS for data streaming, analysis, and TensorFlow for Deep Learning (Long-Short-Term-Memory Networks) as well as Principal Component Analysis (PCA) and Latent Factor Analysis for preprocessing enabling diagnostic, predictive, and prescriptive insights, including machine shutoffs and preventative maintenance.
- The initiative preempted multiple breakdowns, expanding its application across various warehouses.

*Serverless Forecasting Web Application*
- Enabled large-scale forecasting for 50 companies' entire product lines.
- Designed a serverless Data Lab web app using AWS tools, Docker, GitHub, Sagemaker, and Python allowing for an interactive forecasting experience for non-technical stakeholders.
- Developed a UI for non-tech users to query our Data Warehouse via Snowflake's Snowpark and try a multitude of statistical forecasting methods (Decision Trees, Neural Networks, Random Forests, Linear and Logistic Regression, ARIMA, etc.) without the end user having to write a single line of code.
- Established an ML pipeline for time-series data, with visualizations using Streamlit, Plotly, Lambda, matplotlib, seaborn, Altair, and Pandas.
- Created a Data Lake in Amazone S3 featuring millions of data points scraped from sources across the internet.

*Automating Customer Support*
- Automated manual dashboard reloads that were performed hourly from 6:00 AM to 3:00 PM 365 days a year by a team of 8 BI developers: monitoring loads of 60+ dashboards with end users in China, India, Europe and the US.
- Saved hundreds of thousands of dollars in wasted man-hours.

*Cleaning Supplier Data*
- Implemented a probabilistic matching process that matched unknown Reliance Suppliers to their corresponding DUNS numbers.
- Accounted for millions of dollars of previously unknown purchasing figures.

| Project Manager | Adomly | Sep 2023 - Present |
|---|---|---|

*Olympic Gymnastics Rings*
- Built Adomly's online retail web app for 2024 Olympic team member, Dominique Parrish, and led the product design of her signature product: Adomly Gymnastics Rings.
- Made use of Dall-E 3 for product images and assets, allowing for agile smoke tests and market research without the need for a physical product.
- Designed a set of "Blue Ocean" product features aimed at minimizing competition and maximizing untapped market space.
- Negotiated a 30% contract discount with a 3rd party Engineering and Product Design firm saving precious capital while ensuring the development of a safe and manufacturable design.

## Personal Projects

*GPT-4o Gender Bias Research*
- GPT-4o has significant gender bias when giving responses. Designed a framework for testing product recommendations depending on gender, race, and product category. Started with book recommendations.
- Discovered significant differences in product recommendations depending on the user profile given. Default GPT-4o assumes the user is a white male.
- Research is ongoing. Currently co-authoring a study with two international master's students at Simon Fraser University in Vancouver.

*Resume ChatBot*
- Developed a web application leveraging OpenAI's GPT-4 model to interact with recruiters on my behalf.
- Fine-tuned on my past projects, education, and personal history
- Can fill out entire applications without any input from my end
- Know my schedule and can help organize meetings.

*AI-powered Resume Optimizer Web App*
- Developed a web application leveraging OpenAI's GPT-4 model to optimize resumes based on specific job postings.
- The application is designed to analyze job descriptions and modify resumes to highlight relevant skills and experiences, thereby increasing the chances of candidate shortlisting.
- Hosted the application using Streamlit, providing an intuitive user interface for users to input their resumes and desired job postings.
- All project code is publicly available on GitHub for transparency, future collaboration, and improvement.

*USA Women's Wrestling Stats*
- Created a web app for USA women's wrestlers to upload, view, and analyze their match statistics.
- Users can link video of tournaments, view match performance, and uncover what helps them win matches.
- Most Women's Wrestlers have no sports analytics offered to them by their organization. This app serves to help a historically underserved market and democratize sports analytics.

*AI-driven Personalized Nutrition Tracker Web Application*
- Developed a nutrition tracking web application using OpenAI's GPT-4 model, focusing on promoting healthier eating habits.
- The app is designed to accept natural language inputs from users regarding their daily food and drink intake along with basic demographic data (like weight, age, sex, etc.).

- Leveraging AI, the app parses these inputs to identify specific foods, types, and quantities consumed.
- It subsequently generates comprehensive nutrient data for each item, including amino acids, macronutrients, micronutrients, minerals, and vitamins.
- Through an analytical dashboard, users receive a visual summary of their daily nutritional intake, highlighting areas where their diet is deficient or excessive.
- The app is hosted using Streamlit and the code is available on GitHub for public access and contribution.

*Smart Agriculture: Automated Irrigation System*
- Engineered a Raspberry Pi-based automated irrigation system with the objective of optimizing water usage in agriculture.
- Incorporated a soil moisture sensor to continuously monitor soil conditions and send data to AWS for real-time analysis.
- Set up an alert mechanism that triggers notifications when soil dryness reaches a specified threshold, enabling timely irrigation.
- Future enhancements for the project include the integration of multiple sensors for a comprehensive environmental analysis (including nitrogen, oxygen, temperature, wind, and sunlight intensity).
- Plans also include implementing a smart drip irrigation system that uses valves controlled by real-time moisture readings, further automating, and optimizing the irrigation process.

## Skills

| Programming Languages | Tech Stack | Machine Learning |
| --- | --- | --- |
| Python | AWS | PyTorch |
| Java | Azure | TensorFlow |
| SQL | Databricks | Scikit-Learn |
| C | Jupyter | NumPy |
| Ruby | Streamlit | Pandas |
| Julia | JavaScript | PySpark |
| MATLAB | GitHub | Spark |
| R | Docker | SageMaker |
| JavaScript | Snowflake | Hugging Face |
| React | Tableau | OpenCV |
| Django | Power BI | Open AI |
| Flask | Linux, Windows, MacOS | ChatGPT, GPT-4, GPT-4o |

## Volunteer Work & Personal                                                      2012 - Present
*Live For Others Foundation*
- Volunteer at the annual volleyball tournament in which all proceeds went to fund research to find a cure for synovial sarcoma and other rare pediatric diseases.

Volunteer Youth Coach/Mentor
- Ran practices and activities for the 02' -05' youth soccer teams.

Math Tutor
- Varsity Tutors math Tutor for High School and College Students

Co-Ed Recreational Soccer Manager & Player
- Organized and played on several soccer teams in Berkeley, California, Phoenix, Arizona and Corvallis, Oregon