Daniel Selector

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SUMMARY

- Data Scientist & Software Engineer with 10+ years of experience
- Artificial Intelligence AI, Large Language Models LLM, Embeddings, Vector Databases, LangChain, Machine Learning, Data Science, Analytics, Data Processing, ETL
- Proven track record of building data and analytics systems
- Full cycle development from requirements and planning to architecture & implementation
- Data Engineering on clouds (AWS, Azure, GCP) and on-prem, ETL, APIs, big data, data mining
- SQL databases, No-SQL databases, Vector Databases
- Web applications, and business intelligence & analytics
- Math. Modeling: Advanced Calculus, Linear Algebra, Vectors & Tensors, Theory of Complex Variables, Differential Equations, Partial Differential Equations, Probability & Statistics, Optimization, Monte Carlo Simulations, Numerical Methods, Machine Learning, Deep Learning, NLP, Transformers, Generative AI, LLMs
- Programming & Data Science Tools: Python, Pandas, NumPy, SciPy, TensorFlow, Matplotlib, SQL, ETL, Scikit-Learn, NLP/NLTK, Huggingface tools, AWS SageMaker, Javascript, Java, Rust, Excel VBA, databases (PostgreSQL, MySQL, MongoDB, Neo4j), Web Apps, Cloud (Amazon AWS, Azure, Google)

PROFESSIONAL EXPERIENCE:

June 2022 - Present - Selectorweb, Inc - Data Science Consultant

- Large Language Models (LLM) for business - local and on cloud
- Custom private conversational interfaces for business systems
- Talk to your data - cognitive search
- Text generation (generate contracts, instructions, summaries, q/a)
- LLM quantizing, fine-tuning. Prompt-engineering. Self-verification
- RAG (Retrieval Augmented Generation), embeddings, vector database, hybrid database, PostgreSQL
- Huggingface tools, models & APIs, llama.cpp, LangChain, OpenAI, ChatGPT, LLaMa, Mistral, Ollama, LMStudio, Python, Rust

Summer 2019 - Sound-Synthesis Project - Data Science Consultant

- Used Numpy and Scipy to synthesize sounds in Python. Sounds are synthesized by starting with basic waves, such as a sinewave, square wave, or triangle wave, and then modulating their pitches and combining them.
- Filtered these sounds using the fourier transform and with basic filters like the butterworth filter.
- Successfully followed online tutorials to approximate a few instruments and vocode human speech.

Summer 2017 - Instrument-Recognition with Machine Learning - Data Science Consultant

- Used TensorFlow in Python to try to recognize the instruments used in a music recording.
- Adapted the already existing convolutional-neural-network design, and fed in audio data rather than the image data it was meant for. It was trained by generating random mixes of instruments, and feeding in brief audio samples.
- The network was effective on the training data, but produced too many errors in other situations to be useful.

July 2015 - Oct 2016 - Chromation | New York, NY - Data Analyst

- Developed software to convert raw output from prototype spectrometer into spectrum data using least squares estimates and responsivity matrix.
- Determined the minimum shift in wavelength that a prototype spectrometer could detect given typical noise and quantization error.
- Created a 2D simulation with GUI in Java which enabled optical engineers to develop an intuition for key design parameters.
- Wrote Python scripts to automate analysis and quality control.

Feb 2014 – June 2014 - 3D Wireframe Game - Software Engineer

- Utilized Java to create a small 3D, physics-simulation game. The player can drive a hovercraft (represented as a rectangle) on top of uneven terrain (drawn as a grid). The player could press keys to shift the hovercraft's mass and rotate.
- Used linear algebra and geometry to draw the terrain on screen from the player's location and orientation.
- A damped-spring force was used to keep the hovercraft a constant height above the terrain. The hovercraft's moment of inertia was calculated to correctly simulate rotation. Used a 2nd order approximation of rotation to reduce error.

EDUCATION

- May 2022, B.S. in Mathematics, Minor in Philosophy, Stony Brook University, Stony Brook, NY
- Relevant Coursework: Calculus, Linear Algebra, Applied Real Analysis, Probability and Statistics, Data Structures, Analysis of Algorithms, Numerical Analysis