Sam Sims

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Professional Experience

NLP Data Scientist
September 2021 - Present

Workhuman
Framingham, MA

- Led development of guardrails and automated testing pipeline for LLM chatbot using AWS Bedrock. Maintained and adjusted guardrails to avoid user impact and pass Red Teaming.
- Built LLM chain using Claude and AWS Bedrock to identify skills in messages by traversing a 30K node skills relationship graph. Improved precision by 20% over baseline by improving graph traversal.
- Optimized skill scoring algorithm for finding top employee performers. Increased variety in search and slicing results by 27% which satisfied business stakeholders.
- Fine-tuned and deployed BERT to detect bias in messages, using AWS Sagemaker, Jenkins, and Codebuild. Model enhanced core product feature which boosted user engagement by 14%.
- Routinely collaborated with annotators to define tasks and build labeled datasets.
- Built unsupervised transformer based anomaly detection model that found potentially fraudulent awards by measuring surprise in monetary value. Delivered analysis to key client.
- Trained tf-idf text classification model to detect recognition moments in Slack using XGBoost. Projected to capture 50K new events annually and generate $2.75M revenue.
- Created experiment tracking pipeline integrated with AWS Sagemaker and S3. Managed 400+ models from six team members.
- Pre-trained large and small language models with distributed training algorithms on hundreds of millions of tokens in AWS Sagemaker using PyTorch.
- Enabled retention of six high value clients by conducting program usage & attrition analytics.

Data Scientist
June 2018 - September 2021

Travelers
Hartford, CT

- Reduced chat handle time by 16% by automating service reps' after chat work with BERT intent classification & T5 abstractive summarization models.
- Automated 100+ hours of manual review each month by enabling Customer Experience team to discover issues systematically using clustering, semantic search, and sentiment models.
- Provided business partners data driven insights into customer callback and policy cancellation reasons by inventing transformer interpretability method.
- Trained and deployed transformer classification model to lower call volume by encouraging customers likely to call to go online instead. Reduced call volume by 12%.
- Mentored four data science interns and three NLP data scientists.

Projects

Spice Rack AI Search Assistant
May 2024

- Designed & 3D printed spice rack with real time voice controlled spice search. Used OpenAI o1 tools to make rack API calls (e.g. locating spices) which reached a 100% acceptable response rate.
- Developed automatic spice scanning pipeline using CV2 and custom PyTorch object detection model for spice detection and OpenAI for OCR.

Education

Master's of Science in Applied Mathematics
May 2018

Rensselaer Polytechnic Institute
Troy, NY

Skills

Languages & Tools	Python, Git, AWS, Docker, SQL, Redshift, LaTeX
Concepts & Algorithms	Natural Language Processing, LLMs, Unsupervised Learning
Machine Learning Packages	PyTorch, OpenAI, Huggingface, FAISS, Scikit-learn, XGBoost