RAJAT PATEL

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PROFESSIONAL SUMMARY

Experienced Machine Learning Engineer passionate for innovation and automation; with 3.5 years of experience developing scalable ML models using Python, TensorFlow, and PyTorch.

TECHNICAL SKILLS

Programming Languages:	Python, Go, JavaScript, Shell Scripting, SQL
Frameworks & Technologies:	TensorFlow, PyTorch, FastAPI, Flask, Django, AWS Sagemaker, Kubeflow
Tools & Database:	Milvus, Postgres, MongoDB, Kubernetes, Docker, DataDog, Pendo, Prefect, Kafka

EXPERIENCE

Senior Machine Learning Engineer — **Interos Inc., Arlington, VA** — **Jan 2020 - Present**

- Built an Image Search Engine with active learning to detect logos on web pages using Django, Celery, and PostgreSQL.
- Improved real-time business event-to-entity linking in the Interos knowledge graph by 30% using transformers ML model, using vector databases to search against 400M entities.
- Developed joint learning frameworks to extract entities and events from news articles for low resource business events.
- Designed and implemented feedback systems to monitor ML model performance, detect concept drifts, and create new training sets, by integrating AWS Sagemaker ground truth, Kafka, and Prefect.
- Developed an event-based relationship discovery system to extract business relationships from company homepages

Research Assistant (Ebiquity Lab) — **University of Maryland Baltimore County** — **Aug 2019 – Dec 2019**

- Developed a joint learning framework that combines a language model-inspired approach with knowledge graph embeddings to enhance both the quality of knowledge graph embeddings and the representation of fine-grained entity types.

Data Scientist Intern — **Interos Inc., Arlington, VA** — **Jun 2019 – Aug 2019**

- Created an intelligent product crawler using unsupervised and supervised machine learning, achieving 75% accuracy in identifying product names from HTML structures.
- Integrated the crawler with Interos knowledge base, improving linking timelines by 85% through a pipeline.

Research Assistant (STAR Lab) — **University of Maryland, School of Medicine** — **May 2018 – May 2019**

- Explored and developed deep learning techniques for signal processing to predict massive transfusion in trauma patients using vital signs and PPG signals within 24 hours post-injury.
- Developed multi-task algorithms to predict lifesaving interventions and analyze vital sign relationships in trauma patients. Built PPG datasets for predicting outcomes related to blood transfusion thresholds.

Software Engineer — **Larsen & Toubro Infotech, Mumbai, India** — **Jan 2015 – Jul 2017**

- Collaborated on cross-business units to build Python libraries for robotic process automation and OS/database automation with shell scripts.
- Developed and design proof of concepts on SAP data migration optimization research and contributed to end-to-end implementation of SAP applications in complex environments

EDUCATION

M.S., Computer Science — **University of Maryland Baltimore County** — **Aug 2017 – Dec 2019**

B.E., Electronics and Telecomm. Engg. — **Shivaji University** — **Aug 2010 – May 2014**

PUBLICATION

On the Complementary Nature of Knowledge Graph Embeddings, Fine Grain Entity Types and Language modeling - link

InProceedings, EMNLP Workshop on Deep Learning Inside Out, November 2020

PROJECTS

Jointly Learning Knowledge Graph Embedding, Fine Grain Entity Type and Language Models - master's thesis

Created a collaborative learning framework that integrates language model-inspired techniques and knowledge graph embeddings to improve the quality of knowledge graph embeddings and enhance the representation of fine-grained entity types.

Understanding Causal Relationships: Supervised Contrastive Learning for Event Classification - link

A contrastive learning-based method proposed to solve the Causal News Corpus - Event Causality Shared Task 2023, with a specific focus on Subtask 1 centered on causal event classification.

Combining Image Recognition with Knowledge graph Embedding for Learning Semantic Attributes of Images - link

Developed a joint learning model to capture semantic relationships between images by using their detected captioned entities as attributes with knowledge graph embeddings.