PARSA MORSAL

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PROFESSIONAL EXPERIENCE

Blanc Labs *Sep 2021 - Present*
Machine Learning Engineer *Toronto, Ontario*

- Investigated, designed & delivered custom Generative AI and Large Language Model (*LLM*) solutions based on enterprise data using various models with 1 to 65 billion parameters *e.g.* GPT-2, GPT-3, Bloom-3B, Falcon-40B, LLaMA-65B, GPT-NeoX-40B, GPT-J-6B.
- Fine-tuned, optimized & deployed Large Language Models (*LLM*) on AWS EC2 (*P3, P4, G3, G4, and other Nvidia A100 and Tesla T4 GPU instances*) using model retraining & prompt engineering (few-shot learning).
- Designed, implemented & deployed custom Generative AI products *e.g.* Q&A chatbots, customer service assistant chatbots, and automation pipelines on custom datasets using various technologies *e.g.* Retrieval-Augmented Generation (*RAG*), Reinforcement Learning from Human Feedback (*RLHF*), LangChain, and Amazon SageMaker JumpStart.
- Designed, implemented & delivered end-to-end customized machine learning & deep learning products, proof of concepts (*POC*), and data analysis pipelines based on structured & unstructured enterprise data using various methods & technologies, *e.g.* Sentiment Analysis (*BERT, NLTK*), document classification (*RoBERTa*), data extraction (*LayoutLM, Textract*), and image classification (*ResNet-50, ViT*).

McMaster Center for Software Certification (McSCert) *Sep 2020 -Aug 2022*
Research Assistant *Hamilton, Ontario*

- Investigated, designed & implemented a library deprecation detection tool by applying sentiment analysis (*BERT, Word2vec*) on GitHub & Stack Overflow Q&As.
- Investigated, implemented & validated vulnerablity discovery methods for source code security analysis using Bidirectional Long-Short Term Memory (*Bi-LSTM*) classifiers based on serialized Abstract Syntax Tree (*AST*) data.

Sharif University of Technology *Jan 2018 - Aug 2020*
Research Assistant *Tehran, Iran*

- Introduced a novel side-channel attack detection & prediction approach with Support Vector Machines (*SVM*) in ARM Cortex-A series processors by analyzing CPU cache behaviour.
- Participated in detecting *Spectre* attacks by classifying cache calls based on hardware performance counter & kernel event handler using a Multilayer Perceptron (*MLP*) model with 96% accuracy over the *Spectre-V1* dataset.

DistriNet, Katholieke Universiteit Leuven *Feb 2019 - Aug 2020*
Software Engineering Intern *Leuven, Belgium*

- Participated in the development of a software framework for Intel Software Guard Extensions (*SGX*) for security & performance analysis of enclave code execution on the cloud environment.

EDUCATION

McMaster University
M.A.Sc. Software Engineering

Sharif University of Technology
B.Sc. Computer Engineering

SKILLS & QUALITIES

Programming Languages, Frameworks & Libraries

- Python, Java, C/C++, Bash, Linux, TensorFlow, PyTorch, AWS SageMaker, Azure ML, NLTK, scikit-learn, NumPy, pandas, spacy, SciPy, OpenCv, XGBoost, SQL, Apache Spark, Hadoop, Git, Docker, Jenkins, DataDog.