Khizr Ali Pardhan

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Languages and Technologies

- Python
  - TensorFlow
  - PyTorch
  - OpenCV
  - PySpark
  - NLTK
  - spaCy
- JavaScript
  - MERN
  - OAuth
  - SAML
  - Reverse Engineering
- Java
- Tools
  - Splunk
  - GCP
  - Docker

Events

- Neural Information Processing Systems '20 & '21
- Symposium on Advances in Approximate Bayesian Inference
- NWHacks '19 & '20
- SFU Tech: 1st place in case competition
- Trend micro CTF: 1st place in Offensive OPs
- Canadian Cyber Defence Challenge: 2nd place in offensive

Technical Work Experience

- Beedie School of Business, Research Assistant — Feb 2022 - Jun 2022
  - Aggerate financial news documents, decode from HTML, clean & preprocess text
  - Implemented an unpublished algorithm to assess a novel financial matric
- Multi-Agent Robotic Systems Lab, Research Assistant — Jun 2021- Sept 2021
  - Expanded a simulated model of a robot following from in-front in ROS
  - Used Monte Carlo Tree Search to greedily select future movements based on Q-network predictions
- TELUS Communications, Security Data Scientist — May 2020- Dec 2020
  - Solely deployed an unsupervised anomaly detection system for bot detection on logs from PingFederate, an identity and access management platform, using PYOD, PyTorch, Splunk and GCP
  - Passwordless authentication proof of concept, token or biometric based, with virtual smartcard
  - Assisted in updating and debugging SAML integrations with PingFederate and PingOne
- Thales Canada, Information Security Analyst — Apr 2019 – Dec 2019
  - Designed and heavily automated the digital forensics process, and assisted in Incident Response
  - Lead North American firewall optimization efforts, coordinated with external teams
  - Used Nessus scanner for threat hunting, vulnerable remediation and compliance checking
  - Installed and configured enterprise software including ALSID, openIAM, and an ELK stack based SIEM to aggregate and parse Active Directory related logs.

Education

Simon Fraser University, Cognitive Science, — Graduation Aug 2022

- Computer Science: Machine Learning, Data Mining, NLP, Robotics, Cybersecurity, Computer Vision
- Linguistics: Formal syntax and semantics, topic modeling, and text generation & summarization
- Philosophy: Predicate calculus, model logics, formal methods, and knowledge representation
- Psychology: Undergrad level neuroscience & psychopharmacology

Selected Personal Projects

- Biomedical Imaging - Link — Nov 2019 – Jan 2021
  - Classifying EEG signals produced by the stimulus of seeing a digit and thinking it, with a ConvLSTM
  - Detecting infections from 2D & 3D images, while trying to minimize training data and false positives
- Machine Learning for Cybersecurity - Link & Blog — Apr 2019 – Dec 2020
  - Anomaly Detection using a variety of unsupervised techniques such as a Gumbel-Softmax variational autoencoder
  - Network Intrusions Detention and optimizing accuracy with respect to dimensionality of data
- Computational Finance - Link — Dec 2018 – Present
  - Time series forecasting with ARIMA, VAR, technical indicators, and LSTM neural networks
  - Created an algorithmic trading system which beat the S&P500's 5-year returns
  - Applied learnings to my first research paper in spring 2020

Domain Knowledge

- Cyber Security: Digital forensics and incident response, identity and access management
- Financial Forecasting: LSTMs trained on news documents, technical indicators, related stocks
- Computational Linguistics: generation, summarization, multi-label classification of Text
- Data mining: Web scrapping protected data and feature engineering
- Biomedical Imaging: Convolutional-LSTM, up sampling, theoretical pharmacology
- Digital Signal Processing: Fourier analysis, Gabor transform, Kalman filter, frequency domain filters
- Robotics: Reinforcement learning, continuous dynamic programming, optimal control theory, SLAM