ALEXY XENA HACKMANN

DATA SCIENTIST

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A highly motivated and enthusiastic fresh graduate student. Results-oriented individual with 3 years of experience in building, maintaining, and deploying AI-based software, as well as in developing data-driven solutions. An astute individual looking to leverage her technical skills to push business solutions in a full-time role. Displays outstanding data sensitivity and a superb problem-solving capability in her work.

EDUCATION

Nanyang Technological University **Aug 2019 – May 2023**
Bachelor of Science in Mathematical and Computer Sciences
Course: Data Science and Artificial Intelligence, Final Year

- Honours (Highest Distinction)
- **Carro X AWS Hackathon**: Achieved 3rd Placing out of >80 teams.

Nanyang Junior College
'A'-Level Examinations

- Top 5% of graduating cohort based on rank points with five distinctions.

EXPERIENCE

Full-Stack Engineer & Data Science Intern **Jan 2022 – May 2022**
Seagate Singapore International Headquarters Pte. Ltd.
Areas of Research: RuleFit for Classification, Feature Selection, Clustering, Anomaly Analysis

- Worked in an agile environment to develop full-stack web applications with Python Django back-end involving self-tuning Machine Learning (ML) Algorithms to streamline fault detection for Failure Analysis Engineers on short deadlines.
- Constructed dynamic web applications with multi-threading to automatically pre-load data analysis results to reduce user wait time.
- Created re-usable and scalable components in the code which was adopted by the data science team in the United States.
- Identified weakness in current methods to improve the system classification scores to determine hard-drive failures by >10% on test datasets and reduced system run-time by >50% through superior search domain reduction techniques.
- Implemented an anomaly detection web service to detect hard drives displaying test abnormalities to increase fault detection efficiency by >20%.
- Organized and led presentations to upper management about increasing efficiency of the engineering process using ML and software development.

TOP PROJECTS

Evolving Density-Based Fuzzy Convolutional Neural Network with Applications to Portfolio Management **2023**
Areas of Research: Explainable AI, Neuro-Fuzzy Systems, CNN, Financial Time Series Prediction, Data-Driven AI

- Developed a novel highly robust and stable evolving data-driven fuzzy CNN to predict changes in the stock price up to 2 weeks in the future with R2>0.99.
- Used a multi-model approach to successfully reinvent and improve the Vanilla MACD Indicator by reducing its RMSE by >50% for various securities.
- Combined the Markowitz Efficient Frontier with my algorithm to develop a portfolio rebalancing technique that generated a profit of >$1M over the test period of 2 years.
- Architecture: hybrid Neuro-Fuzzy System (NFS) with an embedded deep fuzzy association model and an improved learning mechanism using an online clustering algorithm DBSTREAM for evolving vocabulary construction.
- Working with my Supervisor to publish two papers on the architecture and application of the model in a journal.
- Achieved an A+ grade for my superb work.

Singapore Economic Tracker Application **2022**
Areas of Research: NLP, Sentiment Analysis, Anomaly Detection

- Developed a multi-page web application to track and predict trends in prices of goods & services in Singapore using Plotly Dash, as well as correlate historical price changes to events in the news.
- A three-part data pipeline was built to scrape, preprocess and then analysis the textual data. Various algorithms were applied, such as VADER for sentiment analysis using nltk, anomaly detection and changepoint detection analysis for the time series data.
- Led the UI/UX design and implementation of the webpage using Bootstrap (HTML5 & CSS).
- All algorithms were unsupervised and were benchmarked against research on historical events to validate the results.
- Work done in this project can act as a backbone for future projects in predicting price changes of goods and services using news data as the input features.

TECHICAL SKILLS

- Python (*main development language*)
- Data Science & ML Libraries (*Scikit-Learn, Pandas, NumPy, TensorFlow*)
- Machine Learning & AI Expertise (*Neuro-Fuzzy Systems, Neural Networks, Explainable AI*)
- Web Development (*Django, HTML5, JS, CSS*)
- Database (*Postgres & SQL Server*)
- Deployment using Heroku
- App Development (*Flutter*)
- UX and UI Design

SOFT SKILLS

- **Problem & Data Sensitivity:** Consistently achieved A/ A+ grades in individual projects through insightful analysis.
- **Excellent Adaptability:** Learnt new tech stacks on-the-job and applied learnings to build fully functional systems in <2 months.
- **Problem Solver:** Won 3rd place out of >80 teams in a hackathon by analyzing the problem statement and implementing exceptional ML techniques.

AWARDS & CERTIFICATIONS

- **Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning**
  DeepLearning.AI
- **SQL for Data Science**
  University of California, Davis
- **Predictive Modeling, Model Fitting, and Regression Analysis**
  University of California, Irvine
- **Natural Language Processing and Capstone Assignment**
  University of California, Irvine
- **Innovation: From Creativity to Entrepreneurship**
  University of Illinois at Urbana-Champaign
- **Deep Learning with PyTorch: Neural Style Transfer**
  Coursera Project Network
- **CCA Award for Individual & Team Sporting Excellence**
  Nanyang Junior College
- **SMC Scholarship for Academic Excellence**
  St Margaret's Secondary School
- **SMC Scholarship for Top-in-Cohort**
  St Margaret's Secondary School

LEADERSHIP & VOLUNTEER EXPERIENCE

Committee Member **2020-2021**
Peer Helping Programme

- Underwent training and earned certification in foundational knowledge of common mental health issues, and to be able to identify and reach out to students at risk.

Volunteer **2016**
Dyslexia Association Singapore

- Volunteered at DAS to engage the children through art and reading.