Karthikeyan Shanmugam

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EDUCATION

New York University (NYU)
Masters in Computer Science | Courant Institute of Mathematical Sciences | Sept 2022 - May 2024 (Expected)
- Teaching Assistant for Math Finance Python Bootcamp
- Relevant Coursework: Fundamental Algorithms, Artificial Intelligence, Computer Vision, Cloud & Machine Learning, Realtime & Big Data Analytics, Database Systems, Operating Systems, Data Science for Business (Leonard N. Stern School of Business)

Stanford University
NUS Overseas Colleges (NOC) Entrepreneurship Programme | Aug 2015 – July 2016
- Masters Courses in Management Science & Engineering and Entrepreneurship

National University of Singapore (NUS)
Industrial and Systems Engineering | Bachelor of Engineering, Honours (Distinction) | Aug 2013 - Dec 2017
- University Scholars Programme (Multidisciplinary Academic Honors College Programme)

SKILLS

Languages: Python, SQL, Java, C++, C, SwiftUI

ML / DL: PyTorch, TensorFlow, Keras, Scikit-Learn, CNNs

LLMs: LangChain, OpenAI GPT, Llama 2, Prompt Engineering

Data Science: Pandas, NumPy, Matplotlib, Tableau, Qlikview

Cloud: Docker, Kubernetes, AWS, GCP

Project/Product Mgmt: SDLC, Agile/Scrum, JIRA, Design Thinking, Customer Discovery, Stakeholder Management

Others: Apache (Kafka, Hadoop, Hive), Flask, DevOps

EXPERIENCE

J.P. Morgan | Software Engineer (Associate), Trade Surveillance | Jan 2020 – Jun 2022 | Singapore
- Incorporated trade compliance user requirements to detection engines (Java & SQL) by collaborating with cross-functional teams in trade surveillance, improving the engines' capabilities in flagging non-compliant trading activities by > 20%
- Analysed, designed and developed data pipeline (Python, Kafka & SQL) iteratively with continuous end-user feedback cycle to enrich trade data, resulting in 15% reduction in false positive alerts and 10% savings in manual review time
- Led migration of over 20 team-owned applications on Athena, the bank's internal platform, from Python 2 to Python 3

J.P. Morgan | Software Engineer (Analyst), Infrastructure - Middleware | Feb 2018 – Jan 2020 | Singapore
- Built microservices to automate web server patching (Python & Ansible), reducing manual work by > 30%
- Developed application (Python) to generate usage reports of microservices to aid management in data-driven decisions
- Managed and resolved incidents involving microservices through root cause analysis and proactive user communication

J.P. Morgan | Technology Summer Analyst (Intern), Infrastructure - Storage | May 2017 – Jul 2017 | Singapore
- Built real-time interactive dashboard (QlikView) for the APAC storage team to manage its inventory utilization effectively

Percolata | Product Management Intern | Aug 2015 – Jul 2016 | Palo Alto, USA
- Drove development and deployment of scheduling solution by liaising with 3 clients in the US and the engineering team in China
- Automated operational processes like report generation (Python, SQL & Tableau), reducing manual work by > 50%

Centre of Innovation for Supply Chain Management | Software Engineering Intern | May 2015 – Jul 2015 | Singapore
- Conducted several consultations with small-sized manufacturing client to understand inventory management challenges, worked with industrial engineers to build web application (Python) to address them, and integrated application into client's workflow

PROJECTS

Music Generation using Long Short-Term Memory (LSTM) Network | New York, 2024
- Developed and trained custom LSTM network (TensorFlow, Keras, NumPy & Pandas) on piano MIDI files to generate music

LinkedIn Ice Breaker App using LangChain and Large Language Models (LLMs) | New York, 2024
- Developed web application (Flask) using LangChain (ReAct Agent framework) and OpenAI's GPT-3.5-Turbo LLM to generate personalized conversation starters from data scraped from LinkedIn profiles (SerpApi & Proxycurl API)

Gunshot Detection using Convolutional Neural Networks (CNN) | NYU | New York, 2023
- Developed and tested computer vision architectures (PyTorch) - custom CNN, ResNet18, custom dual-headed EfficentNetV2 and VisionTransformer - to detect gunshot sounds in urban environments using audio spectrograms

MindAId | NYU Entrepreneurial Institute - Startup Accelerator Program (Bootcamp) | New York, 2023
- Startup venture: Generative AI-based virtual companion to support early-stage Alzheimer's patients
- Used Lean Startup and Design Thinking approach to actively engage in customer discovery through interviews

AppEase - Apple Watch Based Solution for Children with ADHD | NYU | New York, 2023
- Identified key user requirements through external stakeholder interviews, prioritized and translated them into technical specifications, led team of 4 in building WatchOS app (SwiftUI) features, and presented deliverables to stakeholders

Text Analysis of Resolution Notes | J.P. Morgan, Trade Surveillance | Singapore, 2021-22
- Used natural language processing techniques (Python) to identify causes of false positive trade surveillance alerts, a key pain point