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, Data Science for Business, Realtime & Big Data Analytics, Multicore Processors: Architecture & Programming

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

Others: PyTorch, TensorFlow, Scikit-Learn, Docker, Kubernetes, Flask, Apache (Kafka, Hadoop, Hive), MATLAB, LangChain, OpenMP, Agile/Scrum, DevOps, Ansible, Jenkins, CI/CD, Jira, Tableau, Design Thinking

EXPERIENCE

J.P. Morgan | Software Engineer
Jan 2020 – Jun 2022 | Trade Surveillance | Associate | Singapore
- Incorporated trade compliance user requirements to detection engines (Java & SQL) improving the engines' capabilities in flagging non-compliant trading activities, a key regulatory requirement for the bank
- Designed and built data pipeline (Python, Kafka & SQL) to enrich trade data and improve non-compliant trade detection processes
- Led migration of over 20 team-owned applications on Athena, the bank's internal platform, from Python 2 to Python 3

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

May 2017 – Jul 2017 | Infrastructure - Storage | Summer Analyst | Singapore
- Built real-time interactive dashboard (QlikView) for the APAC storage team to manage its inventory utilization

Percolata | Product Management Intern
Aug 2015 – Jul 2016 | Palo Alto, USA
- Drove development 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
- Built web application (Python) for small-sized manufacturing clients to streamline production planning and scheduling
- Created business model for web application and validated it with potential clients as part of startup pre-accelerator program

PROJECTS

Gunshot Detection using Convolutional Neural Networks (CNN) | NYU | New York, 2023
- Developed and evaluated 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
- Developed WatchOS and iOS Application (SwiftUI) features to help children better manage their stress, anxiety and behavior
- Built data storage pipeline (Python, Kafka & InfluxDB) to store health data for improving stress detection ML models

Operating Systems Lab | NYU | New York, 2023
- Developed simplified shell (C) that supports basic commands, input/output redirection, pipes and suspended jobs
- Developed multithreaded run length encoder for compression (C) and file recovery tool (C) for FAT32 file system

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