Anol Kurian Vadakkeparampil

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CAREER SUMMARY

Highly accomplished professional pursuing a Masters in Computer Science from the University of Florida. Proven track record as a Senior Software Engineer and Software Engineer at Apisero and GEP respectively, showcasing expertise in data analysis, artificial intelligence, full-stack development, and software engineering. Demonstrated adaptability, versatility, team leadership, cross-functional collaboration and excellent communication skills while delivering projects within challenging timeframes in the software industry.

EDUCATION

University of Florida (Scholarship – Achievement Award) **Aug 2022 – Jun 2024**
Masters in Computer Science *(GPA: 3.61 - SEM II)*

University of Mumbai **Jul 2016 - Aug 2020**
Bachelors in Computer Engineering *(GPA: 8.20)*

WORK EXPERIENCE

University of Florida **Jun 2023 – Present**
Research Assistant (Oct – Present)
- Actively contributing to the development, maintenance, and code translation (Rust/Go) of the DSSAT-Pythia simulation tool to optimize performance and enhance usability, originally built in Python for parallelized computing.
- Engage in the design, development, and maintenance of web-based User Interface Applications utilizing HTML, CSS, NodeJS and JavaScript.
- Pursue knowledge in the realm of ML and AI techniques used in Geospatial Modelling Systems, positioning for future contribution.

Research Assistant – Volunteer (June – Aug)
- Developed a website using React, Node.js with Express Framework, SQL Server, and open-source tools like Mol* (Molstar) for displaying 3D visualizations of the lab's proprietary protein information (Repo – Link).

Apisero (Kipi.bi) **Feb 2022 – Apr 2022**
Senior Software Engineer/Developer
- Leveraged 100GB of GDELT (Global Database of Events, Language, and Tone) data to establish a correlation between stock index fluctuations and international news, delivered under tight deadlines.
- **Guided and led 5 team members** in training projects for kipi.bi (Link) by monitoring code implementation of **data warehousing and data visualization** concepts, **using Snowflake, Tableau, Python and AWS**.

GEP **Aug 2020 – Jan 2022**
Software Engineer/Developer (Promoted from Associate)
- Developed and delivered a robust Inventory Management (IM) module for gep.com (Link) as a full-stack developer, utilizing Object-Oriented Programming and Microservices in a versatile team environment, fostering cross-functionality across 5 departments.
- Designed and owned **5 workflows (Frontend – Backend – Db) with 15 APIs (REST), Angular 2+ (Plugin Architecture), C# (ASP.NET Core - Onion Architecture), Microsoft Azure (Cloud, CI/CD Devops), SQL Server, Elasticsearch, Kibana and MongoDB (NoSQL)**.
- Implemented robust systems to generate usage reports across systems, enabling data-driven decision-making and improving overall efficiency for clients by 20%.
- Established a real-time inventory tracking system across multiple warehouses and locations, providing accurate counts on-demand.
- Devised and deployed a cloud-based file storage solution, resulting in seamless file management and easy retrieval for various workflows, enhancing collaboration, and a 70% reduction in file handling time.
- Developed and executed a highly efficient workflow for document generation (leveraging OCR capabilities) and management to track inventory movement between warehouses.
- Streamlined the process of creating movement request documents within the system, significantly reducing user clicks by 35%.
- Significantly contributed to revamping the core system to accommodate client requests and configurations, ensuring 100% scalability.
- Instructed and mentored new hires - freshers, reducing onboarding time by 20% and providing support in debugging and issue resolution.

Recognition: "Team Player" for preeminent contribution in teamwork awarded by Engineering Manager during Kudos Awards.

PROJECTS

Causal Inference in Machine Learning (Ongoing) **Oct 2023 – Present**
Tech: Python, Machine Learning, Neural Networks, TensorFlow, NumPy, Pandas.
- Conducting exploratory study on causal inference in machine learning, focusing on foundational concepts, cutting-edge techniques, and integration into various domains.
- Implementing and evaluating two counterfactual prediction algorithms i.e., Causal Effect Variational Autoencoder and Counterfactual Regression Learner using Python and TensorFlow, with a focus on estimating treatment effects.
- Utilizing semi-synthetic benchmark dataset IHDP to assess the algorithms' performance, gaining valuable practical experience.

Spatiotemporal Analysis and Prediction of Global Social Unrest (Ongoing) **Oct 2023 – Present**
Tech: Python, Machine Learning, GDELT API, OpenAI GPT API, Pandas, NumPy, Scikit-learn, TensorFlow.
- Developing and refining advanced predictive models such as ARIMA, LSTM and HSMM for early warning and forecasting of global societal unrest, leveraging diverse data sources such as GDELT event data and worldbank.org.
- Conducted a literature survey to assess the current state-of-the-art techniques, identifying key research gaps that warrant exploration.
- Implementing real-time analytic capabilities to ensure timely responses to emerging social unrest events and continuous model updates.

GatorLibrary Management System (Ongoing) **Oct 2023 – Present**

Tech: C++, Advanced Data Structures, Red-Black tree, Binary Min-heaps.

- Develop a comprehensive library management system for GatorLibrary using C++.
- Implement a Red-Black tree data structure for efficient book management and utilize Binary Min-heaps for book reservations.
- Design a sophisticated book node structure, incorporating book details, availability status and reservations and support essential operations (CRUD) like book lookup, insertion, borrowing, returning, and deletion.
- Implemented advanced features, such as finding the closest book and tracking color flips in the Red-Black tree.

Mitigating adversarial and privacy attacks on CNN models **Mar 2023 – Jun 2023**

Tech: Python, Machine Learning, Neural Networks, TensorFlow, NumPy, Pandas, Scikit-learn, OpenCV.

- Conducted research on **defense mechanisms against adversarial examples, evaluating and comparing 8 different methods** including smoothing techniques, noise addition, denoising techniques, color space reduction, and autoencoders.
- Constructed a final defense using a combination of Autoencoder and Local Median Smoothing technique, maximizing effectiveness against adversarial and privacy attacks, while minimally affecting benign accuracy as is demonstrated in project presentation (Link).
- All approaches evaluated through 4 adversarial attacks and 3 privacy attacks; wherein final defense achieved an accuracy in range of 65% to 85% depending on attack which is an improvement of approximately 138%.

Repackaging in Third-Party Marketplaces **Oct 2022 – Dec 2022**

Tech: Python, Androgaurd, ADB, Context Triggered Piecewise Hashing.

- Investigated repackaging in 4 third-party android marketplaces, conducted an exploratory study and **identified repackaged apps by comparing signatures of their dex-codes** to those of reference APKs from the Google Playstore.
- Examined 741 apps (excluding reference: 300 apps), finding that 3% had heavy repackaging and 7% had minor signature discrepancies as is shown in poster presentation (Link).

Algorithms Programming Project **Aug 2022 – Dec 2022**

Tech: Java, Algorithms.

- Successfully developed and rigorously tested 5 versions of 3 different algorithms, progressively increasing in complexity.
- Demonstrated expertise in handling various algorithmic approaches, including Brute Force, Greedy Approach, Divide and Conquer, and Dynamic Programming (Recursive & Iterative).

Interview Evaluation System **Jun 2019 – Oct 2020**

Tech: ML, Neural Networks, Python (Flask), Tensorflow, OpenCV, MongoDB, Watson Speech

- Engineered and integrated a **mock interview platform that employs ML techniques to evaluate candidate confidence and suitability for specific roles** as is demonstrated in project presentation and demo (Link).
- Utilized image processing to provide an assessment of expressions (63% accuracy), ASR to convert speech to text, and applied NLP to evaluate fluency in language and relevance of content.

Publication: Automated Training for Job Interviews in International Journal of Computer Trends and Technology (2020 V-68 I-3 (Link))

SKILLS

Programming Languages: C#, Python, C/C++, Java **Databases:** SQL Server, MongoDB, Elasticsearch
Frameworks: Angular 7, HTML/CSS, JavaScript, TypeScript, Flask, ASP.NET Core, OpenSSL
Architectures/Concepts: Debugging, MVC, Plugin (Angular), Full Stack, CI/CD, REST, Onion
Data Science: Artificial Intelligence, Machine learning, Deep Learning, OpenCV, Tensorflow, Pytorch, Keras, Numpy, Pandas, Computer Vision
Tools: Visual Studio/Studio Code, Word, Excel, Git/GitHub, Postman, AWS/Azure/GCP (Cloud), Docker, Agile, Jira, Kibana, Tableau

ACADEMIC COURSES

Sem 1: Analysis of Algorithms, Distributed Operating System Principles, Computer and Network Security
Sem 2: Mathematics for Intelligent Systems, Trustworthy Machine Learning, Engineering Leadership
Sem 3 (Current): Machine Learning, Advanced Topics in Data Science, Advanced Data Structures

CERTIFICATIONS

- **Specialization: Deep Learning - Stanford University and DeepLearning.AI (5 Courses)** Present
  - Sequence Models
  - Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
  - Convolutional Neural Networks
  - Structuring Machine Learning Projects
  - Neural Networks and Deep Learning
- **Specialization: Machine Learning - Stanford University and DeepLearning.AI (3 Courses)** Oct 2023
- SQL for Data Science - University of California, Davis Nov 2021
- Machine Learning – Stanford University Nov 2021
- Introduction to Game Development - Michigan State University Jul 2020
- Basic Elements of Design: Design Principles & Software Overview – University of Colorado Boulder Jul 2020
- Introduction to XR: VR, AR, and MR Foundations - Unity Jul 2020
- More C# Programming and Unity - University of Colorado System Jul 2020
- Introduction to C# Programming and Unity - University of Colorado System Jun 2020
- **Specialization: Developing Applications with Google Cloud - Google Cloud (4 Courses)** May 2020
- Using Python to Access Web Data - University of Michigan Apr 2020