HISHAM UNNIYANKAL

PhD Researcher | AI & Data Science | Software Engineer

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ABOUT ME

I am a first-year PhD student specializing in PLC safety and runtime verification. With a Master's in Computer Science, I bring 4 years of software engineering experience. My technical expertise spans machine learning (ML), artificial intelligence (AI), deep learning (DL), and natural language processing (NLP). Additionally, I am proficient in the Python programming language and have hands-on experience with Apache Spark.

STRENGTHS

Problem Solving | Flexibility | Adaptability | Quick Learning | Analytical skills | Teamwork

SKILLS

Python | Machine Learning | Neural Networks | NLP | CV | Data Visualization | Web Development | Software Engineering | Numpy | Pandas | Pytorch | Scikit-Learn | NLTK | OpenCV | PHP | JS

EXPERIENCE

Software Engineer | Freelance

April 2020 – October 2023 | Calicut, India

- Developed a dynamic web application for a training academy using PHP Laravel 7, enabling efficient evaluation and visualization of learning outcomes.
- Crafted attractive and responsive UIs for various organizations using HTML, CSS, JavaScript, and Next.js, enhancing user experience and engagement.

Data Science Trainee | IPSR SOLUTIONS LIMITED

April 2020 – August 2020 | Calicut, India

- Collected, analyzed, and interpreted large data sets from various sources such as web analytics, social media, education data, and sales records using Python.
- Used machine learning tools such as scikit-learn, TensorFlow, and PyTorch to design and optimize algorithms.
- Preprocessing structured and unstructured data using data cleaning, normalization, transformation, and encoding methods with pandas, numpy, and nltk tools.
- Communicated actionable insights using data visualization tools such as matplotlib, seaborn, plotly, and Tableau to create charts, graphs, dashboards, and reports.

Software Engineer | Bluecast Technologies

May 2018 – March 2020 | Kochi, India

- Engineered an efficient data pipeline to analyze network and system logs in real-time, identifying potential threats, using cutting-edge tools and technologies such as Apache Spark, Spark Streaming, Flume, and Kafka.
- Implemented a scalable Rule Engine to detect threats from logs by processing both rules and logs, resulting in improved threat identification and mitigation.
- Developed robust APIs using Spring to provide data for visualization, enabling better understanding of system and network health.
- Managed and optimized PostgreSQL database for storing critical information, ensuring data integrity and availability.

Linux Administrator Trainee | Spectrum Softtech Solutions

July 2017 – September 2017 | Kochi, India

- Mastered Linux administration and shell scripting skills, completing various projects and assignments with high quality and efficiency.
- Gained hands-on experience in cloud computing, deploying and managing Linux servers on AWS platform.
- Configured and maintained networks for Linux systems, ensuring secure and stable connectivity.
- Troubleshot and resolved issues related to Linux administration, improving system performance and reliability.

LANGUAGES

Malayalam: Native

English: Advanced / C1

Tamil: Medium / B1

Junior System Administrator | Branding Sparrow

April 2020 – August 2020 | Calicut, India

- Installed and tested various operating systems on computers, ensuring optimal functionality and performance, and backed them up regularly.
- Maintained computer equipment by replacing or upgrading components such as hard drives, RAM, CPUs, and GPUs as needed, increasing speed and efficiency.
- Updated hardware and software packages, keeping abreast of the latest technologies and trends, and troubleshooting any issues that arose during the process.
- Installed and configured computer and network system, following industry standards and best practices, and providing technical support as required.

EDUCATION

PhD in Computer Science | University of Genova

November 2023 – present | Genova, Italy

Master Of Computer Science | University of Genova

September 2020 – October 2023 | Genova, Italy

- GPA: 102/110

Master of Computer Applications | Anna University

July 2014 – June 2016 | Coimbatore, India

- GPA: 7.85/10

Bachelor of Computer Applications | University of Calicut

June 2011 – April 2014 | Malappuram, India

- GPA: 2.6/4

MAJOR PROJECTS

Mathematical Skill Assessment and Training Tool |

April 2020 – July 2020

- Developed and deployed a web application using PHP Laravel 7 and Next.js for a math training academy to assess and enhance students' mathematical abilities and speed.
- Implemented a dashboard to track and evaluate the performance and improvement of students over the duration of the training, using various metrics and visualizations.
- Managed the entire development lifecycle, from ideation to deployment, ensuring the successful completion of the project within the deadline and budget.
- Designed a visually appealing and intuitive static website for the academy, providing an engaging user experience for potential and existing customers.

Security Information and Event Management Tool |

April 2018 – March 2020

- Developed and deployed a robust SIEM tool using Big Data tools (Apache Spark, Spark Streaming, Kafka, HBase, PostgreSQL) to analyze and process network and system logs in real-time or near real-time.

- Designed and implemented a scalable Rule Engine to process various rule types and flag possible attacks, enhancing threat detection.
- Integrated real-time analysis and monitoring for proactive threat mitigation, ensuring organizational security and compliance

ACADEMIC PROJECTS

RMLGym: a Formal Reward Machine Framework for Reinforcement Learning |

March 2023 – October 2023

- Developed a tool called RMLGym to incorporate runtime verification for safe learning of Reinforcement Learning (RL) agents as part of my master's thesis.
- Conducted an extensive review of state-of-the-art papers on Reinforcement Learning, Runtime Verification, and Temporal Logics.
- Utilized RML, a language designed for specifying and monitoring properties of running systems, to create specifications and runtime monitors.
- Extended the OpenAI Gym, a popular framework for developing and comparing RL algorithms, to create a new framework called RMLGym for training RL algorithms.
- Tested and evaluated various RL algorithms using the created RMLGym environments.

Comparative Study of Extractive and Abstractive Text Summarization Techniques | |

05 Jan 2023 – 14 Jan 2023

- Developed and evaluated extractive and abstractive text summarizers using Python and TensorFlow as part of a Natural Language Processing coursework.
- Implemented an extractive summarizer based on the "Another Text Summarizer" research paper, using various normalizers (ultra stemming, stemming, lemmatization) to improve the summary quality.
- Built an abstractive summarizer using Generative Adversarial Networks (GANs) with policy gradient loss and maximum likelihood loss for generator optimization.
- Conducted a comprehensive evaluation of both summarization methods using ROUGE metric and human feedback.

COVID-19 Spread and Vaccination Dashboard | |

06 June 2023 – 28 June 2023

- Developed and deployed an interactive dashboard using D3.js, HTML, CSS, and JavaScript to visualize COVID-19 spread and vaccination consumption as part of a Data Visualization coursework.
- Designed various visualization components to display insightful data, such as maps for geographic distribution, stacked bar charts for vaccine types, packed layouts for population groups, and line charts for temporal trends.
- Implemented attractive filters to enhance user experience and enable customized data exploration based on different criteria (country, region, date, vaccine type, etc.)

Pattern-Preserving Anonymization for Time-Series Data Privacy |

10 April 2020 – 16 May 2022

- Developed and evaluated a privacy protection solution for time-series data using Python and SAX (Symbolic Aggregate Approximation) as part of a Data Privacy and Protection coursework.
- Implemented anonymization techniques based on two research papers to preserve patterns and minimize information loss in time-series datasets.
- Conducted a comprehensive evaluation of the solution using various metrics, such as information loss, pattern preservation, and utility, and datasets.