Kevin Godfrey Verpula

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Summary

A dedicated software engineer and researcher with 2.8 years of experience in full-stack development, AI/ML, and game development. Proficient in a wide range of technologies, including Python, React.js, Unreal Engine 5, and TensorFlow. Proven ability to design innovative solutions and deliver high-impact projects across diverse domains. Recognized for team collaboration, technical leadership, and consistent delivery of excellence.

Experience

Illinois institute of technology | Chicago, IL
Research Assistantship | 09/2024 - 12/2024

- Conducted advanced research on cutting-edge virtual reality (VR) technologies, including Meta Quest 3, BR haptic gloves, Vive Trackers, and Unreal Engine 5.
- Developed fine-grain mesh manipulation techniques to enhance real-time VR experiences.
- Implemented haptic feedback systems to provide immersive VR user experiences.
- Designed and applied a reinforcement learning algorithm to train an agent for navigation through unknown routes in virtual environments, utilizing raycasting and line tracing techniques.

Tata Consultancy Services LTD | Hyderabad, Telangana
Systems Engineer | 10/2020 - 03/2023

- Delivered innovative software solutions leveraging a diverse tech stack, including LightningJS, React.js, Node.js, Selenium, Jenkins, and Alexa Skills Kit.
- Successfully executed three large-scale projects: two LightningJS-based and one React-Node hybrid, demonstrating expertise in both front-end and back-end development.
- Enhanced UI/UX development for FireTV and RDK STBs, achieving a 20% improvement in responsiveness and user interaction efficiency.
- Automated workflows to reduce manual intervention by 30%, significantly increasing operational efficiency.
- Collaborated within Agile teams, employing Scrum methodology to ensure timely and high-quality project delivery.
- Led a newly-formed team of four to design and develop a proof-of-concept application for an RDK Summit, securing a key client deal and earning the “Best Team” award for exceptional performance.
- Mentored junior team members on the LightningJS tech stack, enabling them to become proficient within a short timeframe. This initiative earned the team the “On-the-Spot” award for excellence in knowledge transfer and team-building efforts.
- Researched and recommended test automation tools for IoT devices, leveraging strong analytical and communication skills to simplify complex technical concepts for stakeholders. Successfully led the development of a custom test automation tool, which earned me an “Applause” award for innovation and execution.

Programming Languages

JavaScript, Python, C++, Java, PHP, C#, HTML, CSS3

Frameworks & Libraries

React.js, Node.js, Flask, Spring Boot,Spring, TensorFlow, PyTorch, LightningJS, Selenium, Bootstrap, Numpy, Keras, SKLearn, JQuery, ThunderJS, Matplotlib

Database & Backend

MySQL, Express.js, JSON, Xampp, SpringBoot, Flask.

Tools & IDEs

Eclipse, VS Code, Visual Studio Editor, Unreal Engine 5, Unity, BurpSuite, web Inspection dev tools, Blender, WireShark, Jupyter Notebook, Cisco Packet Tracer

Project Management & Testing Tools

Selenium, Jira, Gerrit, GIT, Github, Jenkins.

Education

Illinois institute of technology | Chicago, IL
Masters in Computer science | 05/2025

- Relavant courses : Intro machine learning, Machine learning, Deep Learning, Natural language processing, Computer vision, Object Oriented Design and programming
- CGPA : 3.8

Karunya Institute Of Technology (Deemed University) | Coimbatore, Tamilnadu
Bachelor of Technology in Computer science and engineering | 05/2020
Relavant Courses : Computer Networks, Web Technology, TCP/IP, Data Structures, Programming in Java, Analysis of Algorithms, Software Engineering, MicroProcessor and Interfacing techniques, Discrete Mathematics, Database Systems, Theory of computation, Object Oriented Programming in C++, cloud computing theory, Mobile Application development using Android, Unix and Linux lab, Internet of Things for Communication Engineering.

CGPA: 3.33

Certificates

Indian Institute of Technology's Certification In AI.

Awards

TCS: Applause Award - Jan 2023, TCS: on-spot award - May 2022, TCS: Best Team Award - AUG 2021

AI & ML Projects

1. **Neural Network from Scratch**: Implemented a fully functional neural network from the ground up to gain a comprehensive understanding of its architecture, including forward propagation, backpropagation, and gradient descent optimization.
2. **Advanced CNN for Image Classification**: Developed a convolutional neural network (CNN) to classify complex datasets, including the CIFAR-10 dataset and binary classification tasks such as cat/dog image recognition. Further extended this project by integrating VGG16 for performance comparison, achieving a 3% accuracy improvement over traditional CNN architectures.
3. **Decision Tree Classifier from Scratch**: Built a decision tree classifier to handle both numerical and categorical data, applying it to real-world datasets like the UCI Weather dataset and achieving an accuracy of 95%. Implemented both Gini impurity and entropy-based splitting criteria to optimize performance.
4. **RNN and LSTM for Sentence Completion**: Designed a recurrent neural network (RNN) and long short-term memory (LSTM) model to perform a sentence completion task by predicting the most probable next word in a sequence. The model demonstrates a practical application of sequence modeling and probability-based text generation.
5. **VGG16 + Vision Transformer for Image Classification**: Combined the convolutional feature extraction of VGG16 with the attention mechanism of Vision Transformers to classify images from the CIFAR-10 dataset. The hybrid model achieved 4% accuracy improvement over standalone CNN or Transformer models by locking the convolutional layers of VGG16 and feeding their outputs to the Transformer's non-encoder layers.
6. **Generative Adversarial Network (GAN) for Image Synthesis**: Implemented a GAN to generate realistic synthetic images using the MNIST dataset. The model progressively improved image quality through adversarial training, achieving remarkable resemblance to the original dataset.
7. **Extractive Question Answering using BERT**: Utilized BERT (Bidirectional Encoder Representations from Transformers) to implement an extractive question-answering system. The model successfully extracted direct answers from a given passage but showed limitations in handling indirect or implied questions, highlighting areas for improvement in fine-tuning.
8. **Image Steganalysis using Inception V1 with Ensemble Learning**: Developed an image steganalysis system to detect hidden messages in images using the Inception V1 (GoogleNet) architecture. Improved detection accuracy by employing an ensemble learning approach with gradient boosting, combining four Inception V1 models, resulting in a 6% increase in accuracy and achieving an overall accuracy of 85%.

Game Dev Projects

1. **Gamified Learning using Unity**: Developed an educational game using the Unity engine to showcase mathematical concepts such as linear algebra, geometry, and calculus in an engaging, interactive format. The game incorporates reinforcement learning and A* pathfinding, allowing users to learn these concepts while playing in real-time, making for an entertaining and educational experience.
2. **VR Games and Simulations for the Construction Industry**: Created multiple VR-based games and simulations aimed at improving safety training and decision-making for construction workers. These simulations replicate the daily life of a construction worker and automate gear handling scenarios. Integrated haptic feedback to provide users with a more immersive and realistic virtual environment, enhancing the effectiveness of training modules.

Web dev Projects

1. **Test Automation Interface using React, Node.js, Jenkins, and Selenium**: Built a hybrid React-Node.js interface to streamline the automated testing process for remote devices and applications. Integrated Jenkins to manage test execution pipelines and Selenium to perform end-to-end testing, ensuring efficient and reliable test automation.
2. **Food Savings Platform using Vanilla JS and PHP**: Developed a web application as part of the Karunya Hacks college hackathon to reduce food wastage by connecting restaurants and hotels with those in need. The platform allows food providers to list surplus food, which is then delivered to needy individuals through a low-cost delivery service, promoting social responsibility and reducing food waste.

IoT/RDK projects

Interface and UI Development for FireTV, Amlogic, and RDK STBs: Developed the core user interface and operating environment for RDK set-top boxes (STBs), ensuring seamless integration with essential device functionalities. Key responsibilities included implementing modules such as the Power Management module (supporting on/off, standby, and sleep modes) and USB functionality with custom UI pages. Collaborated with teams to ensure compliance with third-party applications like Netflix and Amazon. Designed and built a media player from scratch and developed a comprehensive TV schedule menu. Additionally, researched and successfully implemented XCast functionality, enabling casting capabilities to the STB for enhanced user experience. Integrated both Alexa and Google Assistant voice controls to allow users to open and close applications seamlessly, all while prioritizing security and user experience.