Varun Ravi Kumar

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Final year Masters student in the 4+1 Accelerated Integrated program at Arizona State University, with a penchant for full stack project development. Thrives in end-to-end solution delivery, from ideation to execution. Expertise includes strategic project management, execution, and seamless deployment of high-impact, scalable solutions.

Experience

First Outcomes - Software Engineer, Intern *2021 - 2022*

Improved the performance and ensured the reliability of an interactive voice response application by conducting comprehensive end-to-end quality assurance. My work included:

- Identifying and testing edge cases to proactively uncover and resolve several major bugs, significantly enhancing the application's stability and eliminating application down time.
- Thoroughly documented test cases to enhance clarity and improve interpretability for future testing cycles, facilitating smoother handoffs and better collaboration among team members.

This thorough approach ensured a more reliable and efficient application, ultimately improving user satisfaction and operational efficiency.

Bharath Clouds - Fullstack Software Engineer, Intern *2018 - 2018*

End-to-end development of a comprehensive mobile application designed to provide students with real-time access to their grades and facilitate seamless communication with the grade portal. This involved the full stack development process, from conceptualization to deployment, ensuring secure data transfer and low latency interactions. Key application functionalities:

- **Efficient Grade Display:** Designed and implemented features to display grades and academic information clearly, enhancing readability and user experience.
- **Two-Way Communication:** Developed a real-time messaging system to facilitate dynamic communication between students and the grade portal, boosting engagement and support.
- **Secure Data Handling:** Ensured secure data transfer across APIs by maintaining data integrity and confidentiality.
- **Real-Time Data Processing:** Built the application to process and transmit data instantly, reducing latency and providing users with up-to-date information.
- **Comprehensive API Integration:** Integrated robust APIs to seamlessly extract, process, and return information, supporting dynamic user interactions and operations.
- **UI Design:** Crafted an intuitive, user-friendly interface using the Android framework, delivering a seamless and engaging user experience.
- **Responsive Design:** Optimized the application for responsiveness across various devices and screen sizes, ensuring consistent performance on both mobile and tablet platforms.

Projects

GAN Vision - Artist Inspired Image Generation

Developed a Generative Adversarial Network (GAN) from scratch to generate original artwork in the style of some specified artist.

- Trained model on an image dataset of the artist's work using PyTorch, and hyper parameter optimization to determine the optimal learning rate, optimizer and loss function.
- Built an advanced CycleGAN model for image processing and image-to-image translation, featuring sophisticated generator and discriminator neural networks.
- Improved image resolution using upsampling methods and boosted model robustness with residual blocks and dropout to prevent vanishing gradients.

Capstone Project - Amazon Web Service Explorer

Developed a robust application for viewing and managing AWS S3 bucket contents without incurring retrieval fees. Implemented advanced features for seamless bucket sharing and management across multiple users. Key Features and Achievements:

- Created an intuitive interface for displaying S3 bucket contents, eliminating retrieval fees.
- Enabled organizations to share and manage S3 buckets across multiple users efficiently.
- Implemented functionality to merge individual buckets into shared ones, enhancing collaboration.
- Leveraged a tech stack including NodeJS, HTML, CSS, SQL, AWS S3, AWS IAM, and AWS RDS.
- Gained extensive hands-on experience with AWS services and full-stack development.

ClipNotes - AI CliffNotes for Video Content

Developed a Python web app from ideation to implementation that leverages AI models to take notes from video content and present key takeaways in an easily digestible format.

- Supports processing of Youtube videos and original (user uploaded) video content
- Integrated OpenAI's Whisper model and transformer-based architecture for context-aware speech-to-text transformation
- Used GPT-4's language processing to generate concise notes from transcript with a validation loop to check for accuracy and hallucination
- Built an intuitive, clean UI using HTML, CSS, and Flask
- Overview and Demo can be found here

Education

Arizona State University - Tempe, AZ

4+1 Accelerated Masters' Program

Masters of Science – Computer Science, Focus in Machine Learning
June 2025

Bachelors of Science – Computer Science
June 2024
Graduated with the Highest Honors - Summa Cum Laude

Skills

- Expertise in Java, NodeJS, Python
- Effective at communicating project requirements, roadmap and updates with technical and nontechnical stakeholders
- Strong leadership, management and communication skills
- Proficient in Machine Learning Libraries including pandas, numpy, scikit-learn, sciPy, PyTorch, matplotlib, and seaborn
- Technologies Used: Java, Python, GAN, SQL, Jupyter, HTML, Android Mobile Development, CSS, C/C++, Go, AWS S3, AWS RDS, AWS Elastic Beanstalk, AWS IAM, AWS EC2