JAHNAVI RAVI
F1-OPT
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PROFESSIONAL SUMMARY

Passionate and results-oriented professional with expertise in cutting-edge technologies and a competent foundation in applied science and research. Skilled in 3D vision, generative audio, neural rendering, multi-view reconstruction, audio-to-visual synthesis, gesture synthesis, and data-driven solutions. Experienced in translating complex theoretical concepts into practical, accurate, and robust solutions. Thriving in dynamic and collaborative environments, leveraging analytical skills, creativity, and a commitment to continuous learning.

TECHNICAL SKILLS

3D Vision: Proficiency in monocular and stereo vision, 3D reconstruction, facial tracking, 3D Morphable Models (3DMMs), and augmented reality.

Generative Audio: Expertise in audio synthesis, text-to-speech, speech-to-speech translation, natural language processing, and audio-driven facial animation.

Neural Rendering/Compositing: Skilled in deep learning, computer graphics, visual effects, neural rendering techniques (NeRFs, Gaussian Splatting), differentiable rendering (PyTorch3D, Mitsuba), and virtual reality.

Multi-View Reconstruction: Experience with camera calibration, multi-view stereo, structure from motion, and 3D reconstruction from multi-view data.

Audio-to-Visual Synthesis: Familiarity with diffusion models, generative adversarial networks (GANs), and techniques for lip motion synthesis and head movement generation from audio inputs.

Gesture Synthesis: Knowledge of full-body motion reconstruction, 3D body models, and multi-modal gesture synthesis from audio-video inputs.

Advanced Algorithms: Machine learning, deep learning, statistical analysis, optimization, reinforcement learning, and natural language understanding.

Cloud Platforms: AWS, GCP, Azure.

Programming: Python, C++, PyTorch, TensorFlow, C#, CUDA.

PROFESSIONAL EXPERIENCE

Desire Solutions LLC
Jan 2024 - Present
Remote, USA
Machine Learning Engineer
Responsibilities:

- Contributing to the planning and execution of innovative pilot projects in legal and filmmaking domains, integrating cutting-edge technologies and data-driven solutions.
- Collaborating with cross-functional teams, including AI researchers, data scientists, and software engineers, to enhance traditional approaches.
- Assisting in project execution, ensuring successful outcomes, and driving value-added results.
- Conducting market research, analyzing competitor data, and translating insights into project strategies.
- Performing comprehensive data analysis, including data cleaning, exploratory data analysis, and feature engineering to extract relevant features from structured and unstructured data sources.
- Developing and fine-tuning machine learning models using techniques such as hyper parameter optimization, ensemble methods, and transfer learning.
- Implementing containerization using Dockers and contributing to deployments using Kubernetes for scalable and efficient model serving.
- Leveraged AWS for data storage, processing, and model deployment, ensuring seamless integration and scalability.
- Contributing to the establishment of continuous integration and continuous deployment (CI/CD) pipelines for efficient model updates and monitoring.

TryCamel,
New York, United States
May 2023-Dec 2023
AI/Machine Learning Engineer
Responsibilities:

- Applied machine learning and deep learning models (Logistic Regression, Random Forest, SVM, Neural Networks) for data-driven insights, user interface development, and predictive analytics.
- Implemented Python prototypes, AWS SageMaker, and cloud-based ML model deployment, ensuring scalability and performance.
- Crafted end-to-end analytical solutions, utilizing statistical analysis, data visualization, and reporting tools.

- Collaborated with product managers, stakeholders, and end-users to define requirements and translate them into technical solutions.
- Performed data preprocessing, feature extraction, and selection to prepare datasets for model training.
- Implemented machine learning pipelines, including data ingestion, transformation, model training, and evaluation, using frameworks like scikit-learn and TensorFlow.
- Optimized model performance through hyperparameter tuning, regularization techniques, and ensemble methods.
- Deployed models to AWS SageMaker for real-time inference and integrated with the product's user interface.
- Contributed to the establishment of monitoring and logging systems to track model performance and data drift over time.

Tech Projects, North Brunswick, New Jersey, USA
Feb 2023 - April 2023
Role: .Net Trainee
Responsibilities:

- Engineered a dynamic e-commerce platform using ASP.NET, C#, HTML, CSS, and JavaScript, ensuring a seamless user experience across devices and browsers.
- Integrated SQL Server database for secure product management, order processing, user profile administration, and inventory management.
- Implemented version control with Git, facilitating collaborative development, code management, and continuous integration.
- Conducted user acceptance testing, user training, and provided user support during the development and deployment phases.

Louisiana Tech University, Ruston, Louisiana, USA
June 2021 - Nov 2022
Role: Graduate Assistant
Responsibilities:

- Prepared materials on concepts and labs based on Exploratory Data Analysis and Machine Learning for CIC.
- Assisted grad and undergrad students understand the concepts of Data Mining and Advanced Data Mining.
- Assisted faculty members with data collection for potential academic publications.
- Directed students in performing and completing assigned tasks.
- Liaised between faculty and students to answer questions and optimize faculty time.
- Developed comprehensive educational materials on Exploratory Data Analysis, Machine Learning, and Computer Vision, ensuring practical and industry-relevant content.
- Mentored students, providing guidance on algorithm development, data preprocessing, feature engineering, and model evaluation.
- Assisted faculty with research projects, contributing to data collection, experimental design, data analysis, and academic publications.

Machine Learning Trainee, **01/2021 - 02/2021 MedTourEasy**, Delhi, India

- Studied new technologies to support machine learning applications.
- Contributed ideas and suggestions in team meetings and delivered updates on deadlines, designs, and enhancements.
- Developed a project entitled “Sign Language Recognition” under the supervision of the project mentor using Keras, CNN, Django and Heroku.

Deep Learning Intern, **11/2020 - 01/2021 iNeuron**, Bangalore, India

- Built, maintained, and deployed a Deep Learning algorithm for warehouse and apparel applications using YOLO, OpenCV, Flask, and Heroku.
- Proved successful working within tight deadlines and a fast-paced atmosphere.
- Used critical thinking to break down problems, evaluate solutions and make decisions.

Python Developer (Machine Learning), **10/2020 - 11/2020 CodeSpeedy Technology Private Limited**

- Built Python machine learning projects for an online project and provide solutions for the company website.
- Remained abreast of developments in related Python frameworks.
- Developed projects on Churn modeling of bank datasets, Mushroom classification using SVM, predicting purchases based on Social Network Ads, Detected Brain Tumors using Convolutional Neural Network, and Face Recognition using OpenCV.

Projects:

Object Detection using Computer Vision:

- Developed an object detection and tracking system using YOLO and Deep Sort.
- Achieved real-time performance and high accuracy.

Generative Audio Synthesis:

- Explored the use of GANs and diffusion models for audio synthesis.
- Focused on text-to-speech, music generation, and emotional expression.

Reinforcement Learning:

- Implemented Deep Q-Network (DQN) and Policy Gradient algorithms.
- Trained an autonomous agent to navigate complex environments and make optimal decisions.

Virtual Reality Application

- Developed a VR application using Unity and VR headsets.

- Incorporated 3D graphics and interactive elements.

Multi-View Reconstruction
- Implemented algorithms for camera calibration, multi-view stereo, and 3D reconstruction.
- Utilized techniques like structure from motion and bundle adjustment.

Audio-to-Visual Synthesis
- Developed a system for lip motion synthesis and head movement generation from audio inputs.
- Leveraged diffusion models and generative adversarial networks (GANs).

Gesture Synthesis
- Explored full-body motion reconstruction and animation using 3D body models.
- Integrated audio-video inputs for multi-modal gesture synthesis.

Academic Research Projects:

"AI in Filmmaking: Enhancing Visual Storytelling"
- Researched and developed AI-driven solutions for enhancing visual storytelling in films.
- Focused on scene analysis, emotional impact, and multi-modal data fusion.

"Generative Models for Creative Content Creation"
- Explored the potential of GANs, diffusion models, and other generative techniques for creating creative content.
- Considered images, videos, text, audio, and ethical implications.

"Multi-Modal Data Fusion for Human Motion Synthesis"
- Investigated methods for combining audio, video, and 3D data sources to generate realistic human motion and animation.
- Utilized techniques like neural rendering, differentiable rendering, and audio-driven facial animation.

"3D Reconstruction and Visualization from Multi-View Data"
- Developed algorithms and pipelines for 3D reconstruction from multi-view data sources.
- Incorporated camera calibration, structure from motion, and advanced visualization techniques.

LLM-Powered Writing Assistant
- Developed a writing assistant system powered by a large language model (LLM) like GPT-3.
- Implemented features like text generation, summarization, grammar correction, and style transfer.
- Integrated the LLM with a user-friendly interface for seamless writing assistance.
- Explored techniques for fine-tuning the LLM on domain-specific data to improve performance.

Multimodal LLM for Video Understanding
- Trained a multimodal LLM to understand and generate descriptions for videos by fusing audio, visual, and textual data.
- Implemented attention mechanisms and cross-modal transformers to capture interdependencies between modalities.
- Explored techniques for grounding the LLM's output in the actual video content.
- Developed evaluation metrics for assessing the quality and coherence of the generated descriptions.

LLM-Driven Code Generation and Debugging
- Built a system that leverages LLMs for code generation and debugging tasks.
- Implemented a natural language interface for users to describe their programming requirements.
- Explored techniques for translating natural language descriptions into executable code snippets.
- Integrated the LLM with static code analysis and testing frameworks for efficient debugging.
- Developed strategies for handling ambiguity and ensuring the generated code adheres to best practices.

EDUCATION

- Bachelor's in Information Technology from Osmania University India [Aug 2016 – Sep 2020].
- Master’s in Computer Science from Louisiana Tech University. [Feb 2021 – Nov 2022]