NANDHAKUMAR VADIVEL

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SUMMARY

AI and Data Science graduate student with expertise in machine learning, deep learning, and analytics. Proven ability to deliver scalable AI models and solve complex problems. Seeking a Data Science Associate role to drive impactful solutions.

SKILLS

Programming: Python, R, C++, SQL, Java, Ruby, GoLang, JavaScript, C#
Machine Learning: Supervised/Unsupervised Learning, Reinforcement Learning, TensorFlow, PyTorch, Scikit learn, Natural Language Processing, A*
Deep Learning: Tokenization, Text Classification, NLTK, SpaCy, Neural Networks, CNNs, Transformers, Hugging Face, Computer Vision
Data Science: Data Cleaning, Pandas, NumPy, Matplotlib, Seaborn, EDA, ETL, AdTech, Database Management (Postgres, SQL), Grafana
Mathematics: Linear Algebra, Calculus, Probability, Statistics
Frameworks: Svelte, Gradio, Open Source, Financial Services, Predictive Modeling, Risk Analysis, Fraud Detection, Portfolio Optimization

EDUCATION

University at Buffalo - SUNY   **August 2024 - December 2025**
Master's, Artificial Intelligence   *GPA: 3.4*
- Machine Learning, AI, Reinforcement Learning, Deep Learning, Analysis of Algorithm , Numerical Mathematics

Easwari Engineering College   **August 2020 - June 2024**
Bachelor's, Information Technology   *GPA: 8.9*

WORK EXPERIENCE

Opeinapp   **Chennai, TN, India**
Jr Machine Learning Intern   *July 2023 - October 2023*
- Enhanced multilingual video translation by integrating Facebook's M2M-100 model, improving accessibility by 18%.
- Fine-tuned NMT models using PyTorch, reducing translation errors by 25% and increasing global content accessibility.
- Reduced latency by 30% using parallel processing and deployed scalable solutions with Docker, leveraging PySpark for optimized data.

Technolabs   **Chennai, TN, India**
Data Analyst Intern   *January 2023 - March 2023*
- Processed large datasets using ETL workflows and optimized data pipelines with Apache Hadoop and Airflow, improving data flow efficiency by 40%
- Conducted data analysis with Random Forest models, applying hyperparameter tuning, feature selection, and ensemble techniques.

PUBLICATIONS & ACHIEVEMENTS (RESEARCH PROJECTS)

- V. Nandhakumar, B. Jyothsna and S. Gnanapriya, "AI-Driven Produce Management and Self-Checkout System for Supermarkets," 2023 4th International Conference on Electronics and Sustainable Communication Systems (ICESC), Coimbatore, India, 2023, pp. 965-975, doi: 10.1109/ICESC57686.2023.10193204.
- K. Kausalya, S. Rajaraman, V. Nandhakumar, S. Surya and R. Shrayas, "Gazecon – Assistive control system for paralyzed people using a vision-based eye-gaze tracking," 2024 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2024, pp. 1-6, doi: 10.1109/ACCAI61061.2024.10602260.
- Amazon ML Challenge 2023 -Achieved 670th rank globally in Amazon's prestigious machine learning competition.

PROJECTS

Multimodal Personal Knowledge Management System with Responsible AI | XAI ,Knowledge Graphs
- Developed an AI-powered system that improved knowledge organization and retrieval efficiency by 40% using multimodal data (text, images, and structured data).
- Built a user-friendly frontend using Flask and integrated with a scalable backend powered by Postgres. Used Apache Spark for data preprocessing in multimodal pipelines
- Engineered deep learning pipelines leveraging transformers (BERT, GPT) and CNNs, achieving a 30% improvement in accuracy for content classification compared to baseline models.

Enhanced RL Algorithms for Robust Decision-Making | PyTorch, OpenAI Gym, Python, Reinforcement Learning frameworks.
- Developed advanced Q-learning and Actor-Critic algorithms utilizing Python and PyTorch. Deployed workflows on Kubernetes for scalability and leveraged Ray for distributed training.
- Simulated real-world uncertainties, including environmental noise, system failures, and unexpected perturbations, to assess and enhance agent adaptability.
- Collaborated with cross-functional teams to implement RL pipelines in Kotlin and Golang for seamless integration into existing systems.

Generative Audio Synthesis for Personalized Music Recommendation | TensorFlow, Librosa, Essentia, VAE
- Designed a generative model using VAEs and GANs to synthesize personalized audio snippets, achieving 92% accuracy. Automated model training workflows with Jenkins for continuous integration and deployment.
- Evaluated audio quality with FAD and performed result analysis using Excel for improved data visualization.