Vivek Senthil

Rochester, NY | vivek.hosur.one@gmail.com | https://www.linkedin.com/in/vivek-senthil-150101174 | **Open to relocate**

Summary

M.S. in Artificial Intelligence candidate (May 2026) with **3+ years of experience** in AI research and full-stack development. Skilled in building scalable ML systems and implementing **Transformer encoder–decoder models, LSTMs, and ARIMA/SARIMA** for energy forecasting. Seeking **AI/ML Engineer** or **Data Scientist** roles; **available Summer/Fall 2026.**

Education

Rochester Institute of Technology — Rochester, NY, USA
Master of Science in Artificial Intelligence [CGPA: 3.75/4*]* — *August 2024 – August 2026*
Coursework: Forecasting Methods, Advanced Computer Vision, High Performance Data Science

Vellore Institute of Technology — Bangalore, KA, India
Post Graduate Program in Artificial Intelligence [CGPA: 9.69/10*]* — *August 2023 – June 2024*

Sri Krishna College of Engineering and Technology — Coimbatore, TN, India
Bachelor of Technology in Information Technology [CGPA: 8.76/10*]* — *August 2018 – May 2022*

Experience

Software Developer Co-op — January 2026 – Present
Paychex — *Rochester, NY*
- Developed **custom AI agents** capable of generating organization-aware test cases aligned with internal coding standards and best practices, reducing test authoring time from days to hours.
- Performed analysis of internal error logs using **NLP techniques, TF-IDF vectorization, and K-means clustering** to identify recurring patterns, categorize similar issues, and surface actionable insights for engineering teams.

Graduate Research Assistant — November 2024 – Present
Rochester Institute of Technology — *Rochester, NY*
- Designed a multimodal system for police's body worn camera processing to analyze audio, video, and text from raw footage, significantly improved analysis efficiency by reducing manual review time by several hours.
- Implemented a **transformer-based speaker source separation** model to effectively isolate overlapping voices, which provided cleaner audio data and improved transcription accuracy for downstream tasks.
- Executed **large-scale audio processing for speaker separation and transcription** tasks on a distributed GPU-accelerated research computing platform, optimizing performance and scalability.
- Leveraged Whisper, a state-of-the-art audio transcription model, to ensure accurate text extraction and analysis, providing reliable input for the full multimodal system.

Software Developer — July 2022 – May 2024
Quinbay Technologies — *Bangalore, KA - India*
- Developed and **optimized search query processing algorithms** using linear programming, **Apache Solr, and Kubernetes**, improving retrieval speed by 20% while enhancing system scalability and deployment efficiency.
- **Optimized Apache Solr architecture** in a Kubernetes environment, **reducing scaling time** from 2-3 hours to under 15 minutes
- Designed and implemented full CRUD operations for user search history within a **microservice architecture** using asynchronous flows, **multiple Kafka listeners, and Apache Solr**, significantly improving responsiveness and system reliability.
- Migrated codebases across multiple microservices to upgrade underlying MongoDB and Spring Boot dependencies, ensuring compatibility, stability, and improved performance.
- Implemented **multi-type user authentication** and authorization using **Apache Fortress and LDAP** APIs to establish fine-grained, API-level **role-based access control.**

Projects

Electricity Demand Forecasting with Time Series Models | *R, sklearn* — January 2024 – May 2024
- **Forecasted hourly electricity deman**d by implementing and comparing classical and deep learning time series models **(ARIMA, LSTMs, etc.**) to accurately capture complex temporal dependencies and non-linear patterns in the 3.5 years of real-world data.
- **Engineered seasonal features and Fourier-based signals** to improve model robustness on volatile time-series, delivering decent accuracy even on the most challenging evaluation windows.
- Integrated solar generation data into models, capturing day–night production swings and Rochester's strong seasonal sunlight variation to better capture demand–generation dynamics.

Achievements

- Presented research paper titled *"Towards AI-Driven Policing: Interdisciplinary Knowledge Discovery from Police Body-Worn Camera Footage"* at the **9th ASEBP Conference**, Tucson, AZ.
  Link: https://arxiv.org/pdf/2504.20007
- Presented demo of "One-Shot Generative Fake News Detection with Retrieval-Augmented Verification" at Imagine RIT Festival.

Technical Skills

Machine Learning & AI: Scikit Learn, NumPy, Pandas, Matplotlib, OpenCV, TensorFlow, PyTorch, Predictive Modeling, Time Series Forecasting, Encoder-Decoder architecture
Programming Languages: JavaScript, Java, Python, C/C++, R
Frontend Development: React.js, Vue.js
Backend & APIs: Spring Boot, Node.js, Express.js
Databases & Cloud: MongoDB, PostgreSQL, MySQL, Firebase, Google Cloud Platform
DevOps & Tools: Git, Docker, Kubernetes, Apache Solr, CI/CD, Agile, LDAP, Apache Fortress