Aniket Konkar
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PUBLICATIONS

H. Kumar, **A. Konkar**. *Simple Transformer with Single Leaky Neuron for Event Vision.* **Feb 2025**
Proceedings of the Winter Conference on Applications of Computer Vision (WACV) Workshops, 2025, pp. 928-934

A. Konkar, X. Qu. *A Review of Transformer-Based and Hybrid Deep Learning Approaches for EEG Analysis.* **Jun 2025**
International Conference on Human-Computer Interaction (HCI International) 2025.

EDUCATION

Master of Science in Computer Science **May 2025**
The George Washington University | GPA: 3.71/4.00 Washington, DC
Thesis: Enhancing EEG-Based Gaze Prediction with Transformers on EEGEyeNet
Relevant Courses: Computational Linear Algebra, Machine Learning, Neural Networks & Deep Learning, Computer Vision

Bachelor of Engineering in Information Technology **Oct 2020**
University of Mumbai Mumbai, India

RESEARCH AND WORK EXPERIENCE

Resarch Assistant **Oct 2025 – Present**
GW Vision Lab Washington, DC

- Creating a dataset of event camera recordings of various objects responding to sound stimuli, where audio not recorded.
- Since event cameras can capture tiny, rapid brightness changes, sound becomes visible in the form of motion as it physically vibrates objects. Checkout this post to view more information: See Motion from Sound with Event Cameras.
- Investigating methods to reconstruct acoustic signals from event-based visual input. Research Advisor: Dr. Robert Pless.

Software Engineer (Volunteer) **Mar 2025 – Present**
National Collegiate Table Tennis Association (NCTTA) Remote

- Developing and maintaining core features for the NCTTA web application using .NET Core MVC.
- Improved backend performance by 20% by optimizing inefficient SQL queries, removing duplicate data-fetch operations, introducing proper indexing, and streamlining model–controller data flow to reduce unnecessary server load.
- Created extensive documentation covering framework updates, architectural decisions, and new feature behaviors.

Research Assistant **Nov 2023 – Oct 2025**
GW Institute of Public Policy Washington, DC

- Performed statistical data analysis, modeling to evaluate the impact of career pathway programs. PI: Dr. Robert Olsen.
- Developed robust data cleaning and transformation pipelines for multi-site program evaluation datasets.
- Applied statistical modeling and A/B testing to measure treatment effects, using FIRC regression and empirical Bayes estimators. Built Python automation pipelines that parsed the generated descriptive statistics and automatically produced structured analysis reports.

Software Engineer **Aug 2020 – Jun 2022**
Larsen & Toubro Infotech Mumbai, India

- Developed Spring Boot microservices and implemented Selenium-based test automation for an internal Capital Markets platform for our client, Citi Bank, ensuring compliance with corporate QA standards.
- Saved 8 hours of manual testing effort per week by automating complex end-to-end test scenarios using Java & TestNG.
- Optimized SQL queries and improved API efficiency, contributing to a 25% reduction in data retrieval time. Collaborated with cross-functional teams to translate functional specifications into modular, maintainable software components.

TEACHING & TUTORING EXPERIENCE

Teaching Assistant – CSCI 1011. Introduction to Software Development, GW **May 2025 – Aug 2025**
Teaching Assistant – CSCI 1112. Algorithms and Data Structures, GW **May 2025 – Aug 2025**
Teaching Assistant – CSCI 2113. Software Engineering, GW **May 2025 – Aug 2025**
Student Tutor – GW Athletics **Sep 2023 – May 2025**

- MATH 1221. Calculus with Precalculus II.
- MATH 1232. Single-Variable Calculus II.
- MATH 3125. Linear Algebra II.
- CSCI 1011. Introduction to Programming with Java.
- CSCI 1112. Algorithms and Data Structures.

SELECTED PROJECTS

FlavorSignal – Serpapi, Ollama(Phi-3 Mini), Next.js, Python GitHub

- **Outcome:** Given your location and favorite dish as input, FlavorSignal fetches all the nearby restaurants and tells you whether that dish is worth ordering by cutting through noisy reviews and summarizing opinions specific to your dish.
- **Approach:** FlavorSignal filters reviews semantically at the dish level, using query expansion and embedding-based retrieval to isolate only text relevant to the requested item.
- The filtered, item-specific reviews are summarized to provide a concise assessment of whether a dish is worth ordering, including sentiment trends and common complaints.

From-Scratch Implementation of a Low-Level Image Classification Network – Python [*Report*] GitHub

- Developed a complete neural network training pipeline in Python (without using deep learning libraries).
- Implemented manual forward pass, backpropagation, gradient updates, and weight initialization.
- Built custom image preprocessing modules (posterization, enhancement, feature extraction) to improve data quality and model performance.

Landmark Recognition – Python, Streamlit GitHub

- Developed a landmark recognition web application that predicts landmarks from images, retrieves their full address with latitude/longitude, and visualizes them on an interactive map for exploration.
- Leveraged a pretrained tensorflow-hub model, trained on the Google Landmarks Dataset V2.

Real-Time Person Detection & Tracking – Python GitHub

- Developed a real-time person detection and tracking pipeline using YOLOv8x for detection and DeepSORT for tracking.
- Evaluated multiple tracking methods (IOU, SORT, DeepSORT). Tested on an NVIDIA RTX 3070.

Forecasting Hourly Electricity Demand and Assessing Grid Resilience – Python [*Report*]

- Fine-tuned machine learning models (LSTM and Prophet) to predict hourly electricity demand from national grid data.
- Evaluated how major disruptions (like storms or accidents) influence grid performance, turning data-driven insights into recommendations for stronger energy systems.

TECHNICAL SKILLS

Programming Languages: C, C++, Embedded C, Python, MATLAB, R, SQL, Java, JavaScript
Frameworks & Libraries: PyTorch, Keras, Tensorflow, NumPy, Pandas, OpenCV, Scikit-learn, Matplotlib
DL Architectures: MLP, CNN, RNN, LSTM, Self-Attention, Transformers, Attention-Based Fusion, VAE, GAN, LLM
Computer Vision: Image formation & camera optics, Camera calibration & geometry, Feature tracking, Optical flow, Pose estimation, SfM, Visual Odometry, SLAM
Domain Skills: Event-Based Vision, Spiking Neural Networks, Robot control, State estimation, Sensor fusion, Motion planning, ROS, CUDA, ONNX, TensorRT, Linux, BASH

REFERENCES

Robert Pless, *Arnold C. Meltzer Endowed Professor of Computer Science, GW* (pless@gwu.edu)
Robert Olsen, *Research Professor, GW Institute of Public Policy* (robolsen@gwu.edu)
Rahul Simha, *Professor of Computer Science, GW* (simha@gwu.edu)