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.
- 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.

**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

**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 system 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++, MATLAB, Python, R, SQL, Java, JavaScript
**Frameworks & Libraries:** PyTorch, Keras, Tensorflow, NumPy, Pandas, OpenCV, Scikit-learn, Matplotlib
**Deep Learning Architectures:** MLP, Feed-Forward-NN, CNN, RNN, LSTM, Self-Attention, Transformers, ViT, Attention-Based Fusion, Position Map Regression Network, VAEs, GANs, LLMs
**Computer Vision:** Image formation & Optics, SIFT, Optical Flow, SfM, Visual Odometry, SLAM
**Domain Skills:** Event-Based Vision, Calibration, Spiking Neural Networks, Surrogate Gradient Learning, STDP