SAHIL KHOKHAR (SAL)

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TOOLS & TECHNICAL PROFICIENCIES

| PM: Atlassian Jira **| MS Suite:** Excel, Word, PowerPoint **| Collaboration:** Discord, MS Teams **| IDE:** VS Code, JupyterLab **| SCM:** Git **| Programming:** Python, SQL **| Machine Learning:** Computer Vision, PyTorch, Tensorflow, Data Science, Audio Classification, Image Classification, Object Detection, Natural Language Processing**|**

LANGUAGES

English, CEFR "PROFICIENT" (June 2023)

EXPERIENCE

Guru Jambheshwar University of Science and Technology, India **Nov. 2018-Aug. 2024**

Title: **Research Scholar |** Department: **Electronics and Communications Engineering**

Role responsibilities:

- Executed innovative AI research by identifying research questions, designing experiments and advancing AI based Computer Vision models.
- Managed data preprocessing and analysis using Python to prepare datasets for model development and validation.
- Developed machine learning models in frameworks like TensorFlow and PyTorch, refining them through performance evaluation metrics.
- Implemented various versions of YOLO (You Only Look Once) for real-time object detection in images and videos, optimizing detection accuracy and speed.
- Stayed updated with AI research trends by conducting literature reviews, identifying knowledge gaps and positioning research accordingly.
- Published and presented research findings in journals and conferences, ensuring clear communication with both technical and general audiences.

Delhi Global Institute of Technology, India **Jan. 2022-Aug. 2024**

Title: **Assistant Professor |** Department: **Electronics and Communications Engineering**

Role responsibilities:

- Increased student engagement in digital electronics, Python and microprocessor courses through interactive teaching techniques and lab sessions.
- Improved student performance by monitoring progress, providing feedback and providing personalized learning suggestions.
- Ensured a smooth examination process, proctoring exams and maintaining compliance with institutional protocols.

Sanskaram Public School, India

Title: **PGT Physics** **Nov. 2020-Nov. 2021**

Role responsibilities:

- Increased student interest in physics through engaging lesson plans and conducting experiments.
- Monitored and provided feedback on student progress, resulting in an increase in student grades across exams and assignments.
- Proctored school exams, ensuring integrity and compliance with school examination protocols.

EDUCATION

Master of Engineer (M.Engg) in Electrical and Computer Engineering (Concentration in Applied Artificial Intelligence), University of Ottawa, Ottawa, Ontario (Expected Graduation 05/26)

Master of Technology (M.Tech) in Electronics and Communication Engineering, First Division with Honors, Deenbandhu Chhotu Ram University of Science and Technology, India

Bachelor of Technology (B.Tech) in Electronics and Communication Engineering, First Division, Maharshi Dayanand University, India

PUBLISHED RESEARCH

1. Sahil Khokhar and Deepak Kedia, 'Integrating YOLOv8 and CSPBottleneck based CNN for enhanced license plate character recognition', Journal of Real-Time Image Processing, vol. 21, no. 5, p. 168, Sep. 2024. https://doi.org/10.1007/s11554-024-01537-2.
2. Sahil Khokhar and Deepak Kedia, 'Improving license plate detection with YOLO-LPD algorithm', International Journal of Computational Vision and Robotics. http://dx.doi.org/10.1504/IJCVR.2024.10066190.

3. Sahil Khokhar and Deepak Kedia, 'Enhanced licence plate detection using YOLO framework in challenging environments', International Journal of Computational Vision and Robotics. http://dx.doi.org/10.1504/IJCVR.2024.10062468.
4. Sahil Khokhar and Pawan Kumar Dahiya, "Character Recognition for ALPR Systems: A New Perspective," Innovations in Electronics and Communication Engineering, pp. 479-485, April 2020. https://doi.org/10.1007/978-981-15-3172-9_46.
5. Sahil Khokhar, Deepak Kedia, Pawan Kumar Dahiya, "License Plate Detection Techniques: Conventional Methods to Deep Learning," ICT with Intelligent Applications. Smart Innovation, Oct 2022. https://doi.org/10.1007/978-981-19-3571-8_66.

ACADEMIC PROJECTS

Sentiment Analysis from Audio Samples

- Developed a pipeline to analyze audio samples for sentiment classification, focusing on features like pitch, tone, amplitude and spectrogram representations.
- Converted audio signals into spectrograms and applied the Bag-of-Visual-Words technique for feature representation.
- Built machine learning models (Random Forest, SVM and KNN) achieving high accuracy for gender-specific sentiment classification.
- Addressed fairness concerns by developing gender-specific models, achieving better accuracy than gender-agnostic model.

Research Paper Classification Using NLP

- Designed an NLP-based system to classify research papers into predefined categories based on their abstracts.
- Implemented techniques like BOW, TF-IDF and n-gram vectorization and BERT embeddings for feature extraction.
- Built a classification model using machine learning algorithms such as Random Forest, BERT etc., achieving reliable performance on a test dataset.

Wireless Sensor Network to monitor Agricultural Lands

- Designed a wireless sensor network to monitor agricultural lands using Arduino and temperature and humidity sensors.
- Enabled remote monitoring of environmental conditions to optimize crop management.

Separation of Silver and Silicon from Solar Panels using Electrostatic separation

- Used Jira to keep track of the project and keep everyone coordinated.
- Developed an eco-friendly and energy-efficient electrostatic separation system to extract silver and silicon from discarded solar panels.
- Built a voltage multiplier circuit capable of generating 2kV DC for the separation process.

Autonomous Avoidance Detection Vehicle

- Built an Arduino-based autonomous vehicle equipped with proximity sensors to detect and avoid obstacles.
- Implemented navigation algorithms for real-time path correction.

VOLUNTEERING

Volunteered for open house in the Faculty of Engineering, uOttawa.

- Assisted in organizing and guiding prospective students and their families during the Faculty of Engineering Open House.
- Provided information on engineering programs, research opportunities, and student resources to help prospective students make informed decisions.

Volunteered with Center for Entrepreneurship and Engineering Design (CEED), uOttawa.

- Supported students in hands-on prototyping and fabrication projects using CEED's makerspace tools (e.g., 3D printers, laser cutters, and Arduino kits).
- Promoted CEED programs and workshops to fellow students, encouraging curiosity and participation in entrepreneurial and design-driven opportunities.

EXTRA-CURRILULAR ACTIVITIES

- English Debate Society.
- Improv Club.
- Baja Off-Road Racing – Electrical Team.
- NanoBrew Team.