Kanishk Bakshi

Mobile: +91-9350856423
ORCID :- 0009-0000-6602-1283

Email: kanishkbakshi@zohomail.in
LinkedIn: kanishkbakshi
Google Scholar: Kanishk Bakshi

Education

- **Vellore Institute of Technology, Vellore** — Vellore, India
  Bachelor of Technology in Computer Science and Engineering — *Aug. 2021 – July 2025*
  Minor: Information Security
- **Delhi Public School, Ambala** — Haryana, India
  Senior Secondary Education — *April 2006 – March 2021*

Research Experience

- **Defence Terrain Research Laboratory [DRDO] [Lab Link]** — New Delhi, India
  Research Fellow — *May 2024 - August 2024*
- **Vellore Institute of Technology, Vellore** — Vellore, India
  Undergraduate Research Scholar — *Oct 2022 - Present*
- **Elsevier** — Remote
  Reviewer — *May 2024 - Present*
  Elsevier :- Engineering Applications of Artificial Intelligence Here

Publications

- **Journal Papers** :

1. **Knowledge Fusion Network (KFN): A Novel Multi-Network Feature Learning Approach for Satellite Object Detection**
   In Review
   Worked on novel deep learning method: Smaller neural networks learn first, then transfer knowledge via fusion function to a larger network. In contrast to transfer learning, this approach minimizes retraining for added parameters, enhancing efficiency. Application: satellite image detection.
2. **Spatiotemporal Dynamics of High-Altitude Himalayan Lakes (Gurudongmar and Tso Lhamo) Utilizing Deep Learning-Augmented Semantic Segmentation and Time Series Analysis**
   In Review
   Worked on detection of lake expansion of Gurudongmar lake and Tso Lhamo lake in Sikkim, India region using satellite imagery. Achieved great results with the highest performing model Modified KFN fine-tuned to accuracy of $98.7\% \pm 0.05\%$
3. **Qubit and Qutrit based Quantum Inspired Neural Network: Enhancing Stock Market Prediction**
   Accepted :- Nature [Journal : Quantum Information]
   Built a qubit and qutrit-based quantum neural network, which demonstrated superior performance with significantly faster training times compared to classical bit neural networks. All models achieved around $70\% \pm 3\%$ accuracy in stock market prediction, reflecting a notable success given the market's complexity and the absence of overfitting.
4. **Advancements in Heart Disease Diagnosis: Harnessing Predictive Modeling Techniques for Cardiovascular Health Management**
   Published :- Wiley [Journal : Advances in Public Health] **doi.org/10.1155/2024/5300908**
   Developed and evaluated various ML models, including Logistic Regression, Decision Trees, Random Forests, and SVM, as well as a DL model using MLP, for heart disease diagnosis. The best model achieved an accuracy of 83.61%, marking significant progress in predictive accuracy for cardiovascular health management.

- **Conference Papers** :

1. **Deep Learning for Detecting Manufacturing Defects Using Convolutional Neural Networks**
   Published :- Springer **doi.org/10.1007/978-981-97-4700-9_21**
   In the study, the training set had 61.5% faulty parts, and the testing set had 59.2%. PCA with 900 components explained 99.736% of the variance. Image transformation increased the maximum value from 1.0000 to 1.0463. The

CNN model achieved 98% accuracy with four layers, while a simpler two-layer network reached 90%. Logistic regression, decision trees, and gradient boosting achieved 65%, 59%, and 68% accuracy, respectively.

2. **Credit Card Default Prediction Using Machine Learning**
Published :- IEEE **DOI: 10.1109/AICERA/ICIS59538.2023.10420380**
Conducted research on credit card default prediction, evaluating various machine learning models. My work on the Extra Trees Classifier achieved a precision of 1.0 and improved recall from 0.57 to 0.79 with SMOTEENN. The F1-score rose from 0.73 to 0.88, showcasing a substantial enhancement in model performance.

- **Preprints**:

1. **Detection of Malware and Adware Using Machine Learning: A Practical Approach**
Published :- Research Square **doi.org/10.21203/rs.3.rs-4219382/v1**
Developed a neural network-based approach for detecting malware and adware, demonstrating superior performance over traditional methods. The model achieved an accuracy of 95.3%, precision of 96.7%, recall of 94.5%, and an F1 score of 95.6%, proving its robustness and scalability for real-world applications.

Patents

1. Utility Patent Application: Indian Patent Office **In Review [August 2023]**
"Convergenet: A Unified Neural Network Architecture for Integrated Image and Numerical Data Model Learning"

Honors and Awards

1. **APJ Abdul Kalam Research Award**
2. **Raman Research Award**

Funding / Grants

- **Source:- VIT**:

1. Recieved Funding for research on "Advancements in Heart Disease Diagnosis: Harnessing Predictive Modeling Techniques for Cardiovascular Health Management " for 1,00,000 INR
2. Recieved Funding for research on "Qubit and Qutrit based Quantum Inspired Neural Network: Enhancing Stock Market Prediction " for 1,00,000 INR

Technical Skills

- **Machine/Deep Learning**: TensorFlow, PyTorch, NLP, Model Optimization, Transfer Learning, Hyperparameter Tuning, Reinforcement Learning, Time Series Analysis, Generative Adversarial Networks (GANs), Ensemble Methods, Dimensionality Reduction (PCA, t-SNE), Feature Engineering
- **Quantum Computing**: Qiskit, Cirq, Variational Quantum Eigensolver, Quantum Neural Networks, Quantum Data Encoding, Microsoft Azure Quantum
- **Others**: Operating Systems, Computer Networks, DBMS

Certifications

- **Machine Learning Specialization [Stanford University]**
- **Deep Learning Specialization [Deep learning.AI]**
- **Building Video AI Applications at the Edge on Jetson Nano [NVIDIA]**
- **Introduction to Quantum Information [Korea Advanced Institute of Science and Technology [KAIST]]**

Professional Societies

- **AI/ML Club**: Research and Development Head
- **IEEE-VIT**: Technical Member

Academic Advisors

- **Dr Praveen Kumar Reddy Maddikunta (praveenkumarrdeddy@vit.ac.in)** 2024-present
  Professor, VIT Vellore *Profile*
- **Dr. Amitansu Pattanaik (amitansu@yahoo.com)** 2024-present
  Senior Scientist, DRDO *Profile*
- **Dr. Kathiravan Srinivasan (kathiravan.srinivasan@vit.ac.in)** 2023-present
  Professor, VIT Vellore *Profile*
- **Dr. S Vinila Jinny (vinilajinny.s@vit.ac.in)** 2022-Present
  Professor, VIT Vellore *Profile*