

# NIRANJAN KUMAR KISHORE KUMAR

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## EDUCATION

**M.S in Artificial Intelligence**, Yeshiva University New York, GPA: 3.79/4.00 May, 2025(expected)

Committee: Honggang Wang (Chair), Youshan Zhang, David Li

**Coursework:** *Computational statistics & Probability, Machine Learning, Artificial Intelligence, Neural Networks and Deep Learning, Natural Language Processing, AI Capstone: R&D Experience*

**B.E in Biomedical Engineering**, Anna University India, GPA: 3.58/4.00 May, 2021

Committee: R. Kalpana (Chair), S. Rajkumar, M.C. Jobin Christ

**Coursework:** *Human Anatomy and Physiology, Electronic Circuits, Biomchemistry, Pathology and Microbiology, Biocontrol systems, Digital Signal Processing, Medical Informatics*

## RESEARCH EXPERIENCE

**Independent Research** August, 2024 (Current)

Katz school of Science & Health, Yeshiva University, NY

New York, NY

Assisted Professor **Youshan Zhang** in **music generation using Latent Diffusion Model:**

- Finetuned a latent diffusion model with the MusicNet dataset to enhance model efficiency and scalability in music generation.
- Currently designing and implementing a custom model aimed at outperforming benchmark scores of state-of-the-art models, focusing on improved audio quality and generation diversity.

**Machine Learning Research Intern** May, 2024 - August 2024

S&P Global, Collaborated with Yeshiva University, NY

New York, NY

Assisted Professor **James Topor** & Sr.Director of Data Science in S&P Global **Yuri Katz** in comparing financial time series forecasts using state-of-the-art models.:

- Conducted in-depth research on recent state-of-the-art (SOTA) time series models (DLinear & NLinear), validating their effectiveness against traditional models like ARIMA and LSTM in both accuracy and computational efficiency.
- Developed Python automation scripts for data collection and preprocessing, reducing manual tasks.
- Designed end-to-end predictive modeling pipelines for financial forecasting, improving model accuracy.
- Enhanced model performance, achieving a 4x improvement on the Exchange Rate dataset and 17x on Moody's Aaa dataset.

**Research Assistant** March 2020 – July 2020

Rajalakshmi Engineering College

Chennai, India

Assisted Professor A. Shanthi Priya in **Technology fights Covid-19: A brief overview on rapid inventions:**

- Co-authored a research article published in Sambodhi (UGC Care Journal) on COVID-19 technological innovations.
- Investigated advancements in 3D printing, AI, robotics, and telemedicine during the COVID-19 pandemic.
- Identified gaps and proposed future developments in healthcare technology.

## PUBLICATIONS

1. **Kumar, N.K.K.** 2024. Custom Image Segmentation Model for Visual Bird Sound Denoising. [\[Article\]](#)
2. **Kumar, N.K.K.** 2024. Vertebral Heart Prediction Using Deep Learning-Based Canine Cardiomegaly. [\[Article\]](#)
3. **Kumar, N.K.K.** 2024. Detection of Cardiomegaly in Dogs through CNNs: Comparative Analysis with VGG-16 Model. [\[Article\]](#)
4. Co-authored *Technology Fights Covid-19: A Brief Overview on Rapid Inventions* in Sambodhi (UGC Care Journal), covering advancements in healthcare technology during COVID-19. [\[Publication\]](#)

## PROJECTS

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### Image Segmentation for Bird Sound Dataset Using Pytorch [Code]

Developed a ResNet34-based Encoder-Decoder model for image segmentation with IoU of 0.6225 and Dice Coefficient of 0.7442.

### Detection of Cardiomegaly in Dogs through CNN's [Code]

Created a custom CNN in PyTorch, achieving 71% accuracy on dog X-rays, compared to 75% with VGG-16.

### Prediction of Vertebral Heart Score (VHS) using Deep Learning [Code]

Customized deep learning models, achieving 86.25% accuracy, outperforming InceptionV3, ResNet50, and EfficientNetB7 benchmarks.

### Stroke Prediction - Machine Learning [Code]

Implemented ensemble models, addressing data imbalance with SMOTE, achieving 95.94% accuracy and strong classification metrics.

### Physiological Analysis in NHANES Dataset [Code]

Tested a hypothesis on physiological relationships using R, effectively managing data and presenting results in class discussions.

### Modern Technology Microphone Facemask- Prototype

Led development of a facemask prototype with integrated microphone and noise reduction for clear communication during COVID-19. Designed and tested noise reduction using MATLAB, enhancing speech clarity. Planned for future AI features, including Biometric monitoring and speech translation for healthcare use.

## FELLOWSHIPS AND AWARDS

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2024	<b>3<sup>rd</sup> place in Cloudera AI Hackathon</b> , Cloudera Evolve 24	New York, NY
2023	<b>1<sup>st</sup> place in Generative AI Hackathon</b> , UC Berkeley AI Summit	New York, NY
2023	<b>Artificial Intelligence Scholarship</b> , Master's studies, Yeshiva University	New York, NY
2020	<b>First place in Paper Presentation</b> , National Level Technical Symposium	Chennai, India

## WORKING EXPERIENCE

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**Biomedical Data Analyst**, Billroth Hospitals, Chennai, India April, 2022

Sole Biomedical Data Analyst responsible for managing and analyzing data from medical equipment at a branch of Billroth Hospitals, reporting directly to Dr. Hassan, Medical Superintendent. Representative work of mine:

- Automated data collection from biomedical devices using Python ETL pipelines.
- Improved data consistency by implementing cleansing and validation processes, reducing errors by 20%.
- Developed a data visualization dashboard using Python and Power BI to monitor biomedical equipment performance, enabling proactive maintenance and enhancing equipment reliability.

## SKILLS

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**Languages** Python, R, SQL

**Technical Skills** Machine Learning, NLP, Time Series, Deep Learning, Computer Vision( Object Detection, Image Segmentation), Generative AI, Databases (MySQL, MongoDB, AstraDB), Cloud (AWS, Azure, GCP, Oracle)

**Libraries & Tools** NumPy, Pandas, PyTorch, TensorFlow, Keras, Scikit-learn, Docker, Kubernetes, Flask, GitHub

**Soft Skills** Teamwork, Communication, Problem-Solving, Creativity

## CERTIFICATIONS

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2024 **AWS Certified Machine Learning Engineer – Associate**, AWS Cloud

2024 **Google Cloud Generative AI Badge**, Google Cloud

2024 **Oracle Generative AI Professional Certificate**, Oracle

2024 **Machine Learning in Drug Discovery & Cheminformatics**, BDG LifeSciences Pvt. Ltd.

2023 **Humanities Responsible Conduct of Research**, CITI Program