# Nikhil Kapila

*Skilled Machine Learning Practitioner with hands-on experience in Deep Learning, Transformers, and LLMs, coupled with experience in lighting and lighting control systems. Proven ability to design and deploy AI models, optimize ML pipelines, and implement smart control solutions. Authored research on attention mechanisms in CNNs, bridging AI research with real-world applications.*

nikhilkapila11@gmail.com Technical Blog LinkedIn nkapila6 | Github
+971 50 356 4790

## Employment History

Jun 2018 – Present
**Technical Engineer, Luxtron, United Arab Emirates**
Led the transition towards lighting and control systems.
Designed and optimized lighting control schematics and commissioning processes. Collaborated with cross-functional teams to deliver customized control solutions.

May 2024 – Aug 2024
**Graduate Researcher, Georgia Institute of Technology**
Graduate researcher, a part of the Human-Augmented Analytics Group
Implemented a full ML pipeline and researched whether LSTM models could be democratized on different building data.
Published findings and models on HuggingFace Spaces and Github.

Aug 2019 – Sept 2019
**R&D Trainee, Helvar, Finland**
Evaluated intelligent wireless nodes for lighting control systems.
Created technical documentation for AC-DC converters in LED lighting.
Presented market research findings for Middle Eastern lighting trends.

2017 – 2018
**Research Intern, Indian Institute of Technology, Delhi**
Developed simulations for quadrotor systems using MATLAB Simulink.
Analyzed mechanical systems leading to quadrotor design optimizations.

## Education

2023 – Present
**Georgia Institute of Technology**
Master of Science in Computer Science (OMSCS Program)
**Current GPA: 4.0 / 4.0**
**ETC:** Fall 2025
Completed Coursework: *Deep Learning, Machine Learning, Software Development Process, Knowledge-Based AI, Human-Computer Interaction*
Ongoing Coursework: *Natural Language Processing, Big Data for Health (Spring 2025)*
Upcoming Coursework (Summer/Fall 2025): *TBA*

2014 – 2018
**National Institute of Technology**
Bachelors of Technology in Electronics and Communication Engineering
GPA: *6.97 / 10.00*
Relevant CS courses taken: *Data Structures, Algorithms, Object-Oriented Programming, Computer Networks, Image Processing*

## Research Work

### Project based research

1. Nikhil Kapila. *Training LSTMs on Building Genome 2 Data*. July 2024. URL: https://nkapila.me/masters/mscs-research-work.

2. Nikhil Kapila, Julian Glattki, and Tejas Rathi. *CNNtention: Can CNNs do better with Attention?* Dec. 2024. arXiv: 2412.11657 [cs.CV].

## Skills

| | |
|---|---|
| Languages | **Python, C, C++, MATLAB**. |
| Frameworks | Experienced with **PyTorch, ScikitLearn, NumPy, Pandas, Polars, Captum**. |
| Machine Learning Techniques | Deep Learning, Attention Mechanisms, Transformers, Large Language Model (LLM) Fine-tuning, Model Optimization. |
| Tools | HuggingFace, GitHub, Git VCS, DIALux, AutoCAD. |
| Research and Development | Academic Research, Technical Documentation, Experiment Design, Data Pipeline Implementation. |
| Soft Skills | Collaboration in Cross-Functional Teams, Technical Communication, Problem-Solving, Project Management. |

## Misc Experience

### Coded Projects – Open Source Contributions & Masters Work

Summer 2023 — **RPM Problems Solver**. Developed as part of the Knowledge-Based AI (KBAI) course to create an intelligent agent capable of solving the Ravens IQ Test. *Score: 74.00 / 96.00*

Fall 2023 — **Job Comparison Android App**. Built a data-persistent Android application to compare and rank jobs based on multiple parameters. Developed during the Software Development Process course.

Spring 2024 — **Machine Learning Projects**. Implemented ML algorithms, including classification/regression, clustering, dimensionality reduction, and reinforcement learning agents. This post on my technical blog details the adventures in this class.

Summer 2024 — **LSTMs on BGD2 dataset** Created a full end-to-end Machine Learning pipeline using PyTorch & Metaflow during my research work. Deployed on Docker.

Fall 2024 — **Deep Learning Projects**. Developed FCNNs, CNNs, generative models, RNNs, LSTMs, and Transformers using NumPy and PyTorch, Designed and implemented the CNNtention project.

Misc — Projects & Open Source Contributions to many popular projects.

- **Biscuit Code Editor**: Added a feature during my free time as a part of Hackoctober Fest 2024.
- **MLRose**: Contributed to the mlose optimization library, a resource used in Georgia Tech's CS7641 Machine Learning class. Wrote the full documentation and added a few features.

More — **Full List** of projects can be viewed on my Github.

## Misc Experience (continued)

### Certifications – Listing Recent 3 Only

2024
- **Fundamentals of Deep Learning**. Awarded by Nvidia.
- **Machine Learning with Python**. Awarded by IBM.
- **Machine Learning Foundations: A Case Study Approach**. Awarded by University of Washington.

Others
- **Full & Detailed List** can be viewed at my LinkedIn

## References

Can be viewed on LinkedIn

Others available on request