

Akash Mittal

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EDUCATION

**University of Illinois,
Urbana-Champaign (UIUC)**

MASTERS IN COMPUTER SCIENCE
Aug 2022 – Dec 2023 | GPA: 4.0/4.0
Specialization in Machine Learning and Systems

**Indian Institute of Technology (IIT),
Delhi**

B.TECH IN COMPUTER SCIENCE
Aug 2015 – May 2019 | GPA: 9.2/10.0
• 3 times on Dean's list
• AIR 81 in Jee Advanced'15.

SKILLS

Programming

Languages/Frameworks:

- Python (OpenCV, PyTorch, Keras)
- C/C++ • Kotlin • GoLang • CUDA
- Django • GraphQL

Others

- Android/Web Development (backend)
- CI/CD • AWS • git • docker • SQL
- Big data management (Spark)

COURSEWORK

ML/AI/Data Science

Artificial Intelligence

Machine Learning

Information Retrieval

Data Mining

Autonomous Vehicle Engineering

Deep Learning for CV (A+)

Systems/Theory

Distributed Systems (A+)

Advanced Data Management*

ML for Large Scale DB Systems

Operating Systems

Parallel Computing

TEACHING

- Machine Learning + Data Systems
- Algorithms for IoT and Data Science
- Computer Architecture
- Digital Logic and System Design

SIDE PROJECTS

- Decision support system for GOI [↗](#)
- Music Table (Drums) [↗](#)
- Gym exercise counting system [↗](#)
- Gym management application [↗](#)
- Branular: Brain study tool [↗](#)
- InNav: Indoor Navigation for Blind [↗](#)

INDUSTRY EXPERIENCE

SAMSUNG - THINK TANK TEAM | ML INTERN CALIFORNIA | MAY '23 - AUG '23

Developed a computer vision algorithm to estimate the distance of the user from a single camera. The proposed technique matches the performance of commercially available depth cameras. My work led to 300\$ cost reduction of the product. Filed **2 US Patents** as a lead inventor.

SAMSUNG RESEARCH | ML ENGINEER

SEOUL, SOUTH KOREA

Deploy Team - Location based intelligent services

Jan '21 - Jun '22

Worked with designers and product managers to find new business opportunities. Led a team of 4 engineers to develop the whole ML pipeline starting from data collection, training deep learning models, optimization, and deployment on the end devices. Deployed the location-based AR service in one of the biggest retail stores in Korea and it was used by thousands of users in the first week of the launch.

Data Intelligence Team

Sep '19 - Dec '20

Developed novel scalable ML model interpretability algorithms achieving 10X speedup over existing systems. Developed a deep learning-based music recommendation system (placed in top 10 teams in Korea in the contest).

Awards at Samsung

- **S/W Development Award** for improving the code review culture of the team. Awarded to top-10 developers annually in Samsung Research.

SELECTED RESEARCH PROJECTS

AIDB: A SPARSELY MATERIALIZED DATABASE FOR QUERIES USING ML

- Proposed and developed a novel approach to analyze unstructured data (videos, images, and text) by mapping ML models to structured tables.
- Achieved **2-350×** SQL query speedups on sparsely materialized tables.
- This work is *under review* in **SIGMOD 2024** and open-sourced.

LENTALK-PERSONAL AI ASSISTANTS FOR PHYSICAL WORLD [↗](#)

- Developed the camera and motion sensors-based privacy-preserving mobile device identification & localization technology. Filed a **US Patent**.
- Pitched the idea at the Cozad (UIUC's venture capital competition).

GCOMB: LEARNING COMBINATORIAL ALGORITHMS OVER LARGE GRAPHS [↗](#)

- Proposed a novel deep reinforcement learning based algorithm to solve combinatorial problems over billion-sized graphs.
- GCOMB is 100 times faster and marginally better in quality than SOTA.
- This work is published in **NeurIPS 2020**.

PUBLICATIONS AND PATENTS (Citations = 125+)

1. **A. MITTAL** et al. **AIDB: a Sparsely Materialized Database for Queries using Machine Learning.** ****SIGMOD, 2024**
2. S. Manchanda, **A. MITTAL** et al. **GCOMB: Learning Budget-constrained Combinatorial Algorithms over Billion-sized Graphs** **NeurIPS, 2020**
3. **A. MITTAL** et al. **Robotic ergonomic monitor arm for better posture.** **2023**
4. **A. MITTAL** et al. **Automatic feature calibration for depth estimation.** **2023**
5. **A. MITTAL** et al. **Identification and localization of mobile devices.** **2023**
6. **A. MITTAL**, et al. **Device for building a map of indoor space.** **2022**