Akash Mittal

☎ +1.447.902.1250 | ✉ akashm3@illinois.edu | in akashmittal1798 | ⌂ akash17mittal | scholar | ⌂ homepage

EDUCATION

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN (UIUC)
MASTERS IN COMPUTER SCIENCE
Aug 2022 – May 2024 | GPA: 4.0/4.0

INDIAN INSTITUTE OF TECHNOLOGY (IIT), DELHI
B.TECH IN COMPUTER SCIENCE
Aug 2015 – May 2019 | GPA: 9.2/10.0

- IITD Semester Merit Award for 3 semesters for academic excellence.

SKILLS

Programming:
Python• C • C++ • Android/Web Development • Spark • Flutter • React • Django • GraphQL • Kotlin • PyTorch • SQL • AWS • GoLang

Project Experience
Machine Learning • Big Data Analysis • XAI • Recommender Systems • Information Retrieval • Computer Vision • Deep Learning on Graphs • On-device ML • Mobile Sensing • Social Network Analysis

COURSEWORK

ML/AI/DATA SCIENCE
Artificial Intelligence
Machine Learning
Information Retrieval
Data Mining
Autonomous Vehicle Engineering
Deep Learning for CV

SYSTEMS/THEORY
Distributed Systems
ML for Large Scale DB Systems
Operating Systems
Parallel Computing
Computer Architecture*
Algorithms for IoT and Data Science*

* denotes served as Teaching Assistant

SIDE PROJECTS

- Decision support system for GOI ⌂
- Music Table (Drums) ⌂
- Gym exercise counting system ⌂
- Gym management application ⌂
- Notes application for foldables ⌂
- OD Engine ⌂
- Branular: Brain study tool ⌂
- InNav: Indoor Navigation for Blind ⌂

INDUSTRY EXPERIENCE

SAMSUNG RESEARCH | ML ENGINEER   SEOUL, SOUTH KOREA
AWARDS
- **S/W Development Award** for improving code review culture of the team.
- Won **2nd place** in company-wide hackathon for designing an innovative note-taking application for foldable phones.

THINK TANK TEAM   CALIFORNIA, USA | MAY '23 - AUG '23
Worked on Samsung's secret future products related to robotics and CV.

DEPLOY TEAM - LOCATION BASED INTELLIGENT SERVICES   JAN '21 - JUN '22
Built and commercialized ⌂ an on-device deep learning based indoor localization system being used by 1000s of users.

DATA INTELLIGENCE TEAM   SEP '19 - DEC '20
Developed novel scalable explainable AI algorithms, derived insights from hundreds of terabytes of Samsung Health log data, and developed music recommendation system (Placed in top-10 teams in the contest ⌂).

SELECTED RESEARCH PROJECTS

AIDB: A SPARSELY MATERIALIZED DATABASE FOR QUERIES USING ML

AIDB is a novel approach to analyze unstructured data (videos, images, and text) by mapping ML models to structured tables, enabling efficient querying and eliminating complex UDFs. The proposed technique achieves query speedups (2-350×) on sparsely materialized tables on real world datasets. This work is submitted in **VLDB 2024** and open-sourced.

LENSTALK-PERSONAL AI ASSISTANTS FOR PHYSICAL WORLD ⌂

Developed the camera and motion sensors-based privacy-preserving mobile device identification & localization technology. Filed a **US patent**.

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 learning based combinatorial algorithms. This work is published in **NeurIPS 2020**.

PUBLICATIONS AND PATENTS (Citations = 125+)

1. **A. MITTAL**, C. Mo, J. Fang, T. Dai, D. Kang. **AIDB:** a Sparsely Materialized Database for Queries using Machine Learning. *Submitted in VLDB 2024.*

2. S. Manchanda, **A. MITTAL**, A. Dhawan, S. Medya, S. Ranu, and A. Singh. **GCOMB:** Learning Budget-constrained Combinatorial Algorithms over Billion-sized Graphs ⌂ *Neural Information Processing Systems*, 33, 2020.

3. **A. MITTAL**, B. Harms, N. Clarke. Automatic calibration of camera for monocular depth estimation. Patent Application No.: TBD. Filing date: July 27, 2023

4. **A. MITTAL**, R. Choudhury. Identification and Localization of Mobile Devices. Patent Application No.: 63/458,615. Filing date: April 11, 2023

5. **A. MITTAL**, H. Cho. Device for building a map for indoor space. Patent Application No.: KR2023/007198. Filing date: June 30, 2022