# Gautam Ahuja

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## EDUCATION

**Ashoka University** — Haryana, India
*Postgraduate Diploma in Advanced Studies and Research - Computer Science* — *August 2024 - May 2025*

**Ashoka University** — Haryana, India
*Bachelor of Science (Hons.) - Computer Science; CGPA: 3.87/4.00* — *August 2021 - May 2024*

**Emory University** — Georgia, USA
*Summer Opportunity for Academic Research* — *May 2023 - August 2023*

## WORK EXPERIENCE

**Nygen Analytics** — Lund, Skåne County, Sweden
*Scientific Computing Engineer* — *August 2024 - Present*

- Enhanced, tested, and extended the open-source package Scarf (a framework for memory-efficient analysis of single-cell genomics data) by designing optimized random merging of large datasets, developing metrics for cell population integration quality, and benchmarking library resource consumption.
- Currently developing CyteType®, a high-fidelity cell annotation and characterization package designed for automated cell annotation and beyond, enhancing the capabilities of single-cell genomics data analysis.

## RESEARCH EXPERIENCE

**Koita Centre for Digital Health** — In-person
*Research Assistant* — *October 2023 - Present*

- Designing and developing of augmented intelligent systems for health involving benchmarking and fine-tuning of open-source large language models using quantized low-rank adapters extract the Indian drug brand names.
- OMOP standardisation and interoperability of terms from unstructured clinical text to and graph representations of patient level clinical data.
- Designed and prototyped linguistic-agnostic intelligent support systems for probable diagnosis to aid in clinical settings. Project Link

**Mphasis AI & Applied Tech Lab at Ashoka** — In-person
*Research Assistant* — *December 2024 - April 2025*

- Contributing to Ensemble learning framework to find potential small molecule inhibitors against NS3 serine protease under Dr. Rintu Kutum using data driven and deep learning approaches.
- Designed and developed agent-based workflow for probable abdominal pain diagnosis. Benchmarked open-source large language models for NER and empathy tasks.

**HealthUnity** — Part-Time
*Research Intern* — *Mar 2023 - August 2023*

- The Folk Computing Project enhances the accessibility of health-related information to the general public, exploring prompting methods, model development, and data inference techniques. Developed a multilingual healthcare chatbot for Android. Project Link

**Mphasis AI & Applied Tech Lab at Ashoka** — Remote
*Machine Learning Research Intern* — *May-July 2023*

- Contributed to FoodComputing@Ashoka initiative in the development of a new ontology and knowledge graph under Dr. Partha Pratim Das (PPD) using NER.

**Ashoka University** — Sonipat, Haryana
*Research Intern* — *Nov 2022 - March 2023*

- Analysed human cough sounds in the frequency spectrum, utilizing Mel-frequency cepstral coefficients and Spectrogram features to build deep learning-based classification models with a best overall accuracy of **82.65%**.

## Teaching Experience

- **Ashoka Horizons**  Remote
  *Teaching Fellow*  *May–June 2024, May–June 2025*
  - Teaching Fellow for the course *Applied Data Science with ML and AI*.
  - Mentored high school students, guiding their learning and capstone project development.

- **Indian Institute of Technology Jodhpur (IIT-J)**  Remote
  *Teaching Fellow*  *May 2023 - Aug 2023*
  - One of Primary Teaching Fellow during the Summer 2023 session for the course CSL2010: Introduction to Machine Learning - A Practical Perspective at IIT-Jodhpur.
  - Worked with professors Dr. Richa Singh, Dr. Pankaj Yadav, Dr. Sucharita Dey, and Dr. Rintu Kutum.

- **Plaksha University**  Chandigarh
  *Visiting Teaching Faculty*  *May 2023 - July 2023*
  - Microcontroller Sessions: Conducted instructional sessions and guided students in comprehending the ESP32 chipset, electronics principles, programming and computer networking concepts.
  - Project Mentoring: Assisted students in utilizing Raspberry Pi, and micro-controllers, to construct **AgBot**, an agriculturally focused IoT project with cloud-based data storage, analysis and computation.

- **Ashoka University**  Sonipat, Haryana
  *Undergraduate Teaching Assistant*  *Aug 2022 - May 2023*
  - Teaching Assistant for CS-1104: Discrete Mathematics instructed by Dr. Goutam Paul.
  - Teaching Assistant for CS-1101: Introduction to Computer Programming instructed by Dr. Goutam Paul.
  - TA Evaluation Score: 4.79/5.00 and 4.32/5.00, respectively.

## Publications

- **Assessing the Reliability of Large Language Model-Driven Agentic Workflows for Single Cell RNA-Sequencing Annotations**  In-progress
  *Antill, A., **Ahuja, G.**, et al. 2025*

- **Agent-based Conversational Augmented Intelligence System for Probable Abdominal Pain Diagnosis in Outpatient Setting**  In-progress
  ***Ahuja, G.**. DipASR Thesis. 2025*

- **Discovering patient subtypes using hypergraph over interoperable EHR data in India**  In-progress
  *Kaur, B., **Ahuja, G.**, et al. 21st Academy Of Discrete Mathematics And Its Applications (ADMA) 2025.*

- **Interpretation Of Anti-Nuclear Antibody Indirect Immunofluorescence Patterns Using AI**  Poster
  *Jain, H., Sivasami, K., Kutum, R., **Ahuja, G.**, et al. Annals of the Rheumatic Diseases 84 (2025): 892.*

- **Leveraging Language Models and a Common Data Model to Unlock Real-World Evidence from Unstructured Electronic Health Record Data in India**  Poster
  ***Ahuja, G.**, et al. Research Highlights for awardees of GKII-Ashoka Breakthrough Grant 2024.*

- **Accelerating cough-based algorithms for pulmonary tuberculosis screening**  Preprint
  *Results from the CODA TB DREAM Challenge. Jaganath, Devan, et al. medRxiv (2024): 2024-05.*

## Positions of Responsibility

- **Head of Department, Projects (July 2024 - April 2025)**: Ashoka Health Research Club, Ashoka University.
- **Computer Science Representative, Department of Computer Science, Ashoka University (2023-2024)**:

## Conferences and Talks

- [**TALK**] **Young Scholar Program 2025**: **Two** talks on fundamentals of machine learning.
- [**TALK**] **Young Scholar Program 2024**: **Four** talks on computational thinking.
- [**ATTENDEE**] **Google Research India**: Selected for attending **Google Research Week** (India) 2024. Led by top experts, the conference explored cutting-edge ML techniques while also addressing their limitations and critiques.

## Honors and Awards

- TARGET 2035 (DREAM)
  Secured **3rd position** in Step 1 and Step 2 of DREAM 2025 Drug Discovery Challenge
- Sensorium 2023
  Secured **4th position** in Sensorium (NeurIPS 2023) Competition (October '23)
- Dean's List, Ashoka University
  High Academic Achievement in Spring 2025, Monsoon 2023, Spring 2023, Monsoon 2022, Spring 2022, and Monsoon 2021 Semester. The Dean's list is a recognition from the entire University.
- CODA (Dream Challenge for Tuberculosis)
  Secured **6th position** in CODA-TB DREAM Challenge (January '23).