ARYAMAN BAHL

📱 +91 7973967419   ✉ aryaman.bahl@research.iiit.ac.in   in linkedin.com/in/aryaman-bahl-840888243

EDUCATION

- **B.Tech in Computer Science and Master of Science in Computational Natural Sciences by Research**
  International Institute of Information Technology (IIIT), Hyderabad, India   *Aug 2022 - Pursuing*
- **Senior School Certificate Examination (Class 12)**
  MGN Public School, Jalandhar, Punjab, India   *July 2022*
  - CBSE Board Aggregate: 91%
- **Secondary School Examination (Class 10)**
  MGN Public School, Jalandhar, Punjab, India   *July 2020*
  - CBSE Board Aggregate: 92%

CURRENT RESEARCH WORK

- **Integrating Transformer Models for DNA Methylation and Expression Analysis in Breast Cancer**
  Under the supervision of Prof. Nita Parekh at CCNSB, IIIT Hyderabad   *Aug 2024 – Present*
  - Working on DNA methylation profiling in breast cancer using RRBS data from the METABRIC cohort, with a focus on integrating transformer-based models like BERT to jointly analyze methylation and gene expression for subtype classification and biomarker discovery.

RESEARCH INTERESTS

- AI in Healthcare
- Medical Imaging
- Explainable AI
- Machine Learning
- Deep Learning
- Genomics

RESEARCH PUBLICATIONS

- A. Khan, **Aryaman Bahl**, A. Haleem, S. Bahl, M. Javaid, Significance of Hybrid Manufacturing and its Technologies in the field of Manufacturing and Design Industry, Int. J. Emerg. Trends Res. (2025) 53–61.
- Y. Khan, A. Minhaj, **Aryaman Bahl**, A. Haleem, S. Bahl, M. Javaid, Exploring the Significant Advancements and Potential Applications of Additive Manufacturing in Industry, Int. J. Emerg. Trends Res. 6 (2025) 1–13.

INTERNATIONAL CONFERENCES / STCs ATTENDED

- Attended the International Conference on Recent Advances in Sustainable Environment (RAISE-2024) held at Himachal Pradesh University, Shimla on 22-23 November 2024.
- Participated in one-week Short Term Course on *Computational Genomics: Path to Precision Medicine* jointly organized by IIIT Hyderabad and Heritage Institute of Technology, Kolkata, from 24th to 28th March 2025.
- Participated in one week Short-Term Course on *Applied Machine Learning using Python* organised by Department of Computer Engineering at National Institute of Technology Kurukshetra, Haryana from 3rd to 7th January 2025.

SKILLS

- **Programming Languages**: Python, Java, Javscript, C, C++, MATLAB, R
- **Technologies**: Machine Learning, Deep Learning, Bismark, Samtools, Methylkit
- **Tools**: Statistical Data Analysis, Docker, Git, MySQL
- **Frameworks**: React, Express, Flask, NodeJS, Mongo
- **Platforms**: Linux, Windows, Arduino

PROJECTS UNDERTAKEN

- **Corrective Machine Unlearning for MRI Reconstruction**
  Under the supervision of Prof. Ponnurangam Kumaraguru at IIIT Hyderabad   *Jan 2025 – June 2025*

- Developed a machine unlearning framework for MRI reconstruction to selectively erase the influence of specific data without full retraining, enhancing robustness and ensuring compliance with data privacy regulations.
- Implemented and evaluated the SSD (Selective Synaptic Dampening) algorithm on MRI datasets, demonstrating effective artifact reduction and improved image quality with minimal data removal.

Tech Stack: Unlearning Techniques, Autoencoders(E2E-Varnet), CycleGan, Adverserial Attacks, MRI Reconstruction, Deep Learning.
Datasets: M4RAW, CMRxRecon

- **PaliGemma Model for Detecting Littering Behavior in Images**
  Voxela, San Francisco   *May 2025*
  - Developed an object detection pipeline to identify individuals littering using a frozen PaLiGemma encoder with a lightweight custom detection head, trained under Colab Free GPU constraints with mixed-precision (AMP) and AdamW optimizer.
  - Applied heuristic pseudo-labeling with YOLOv8n on the Roboflow Littering dataset for weak supervision, and evaluated the model using classification reports and confusion matrices in a modular, memory-efficient setup.

Tech Stack: paligemma model, huggingface, Computer Vision, Weak Supervision, PyTorch, Transformers, Data Annotation, Model Optimization, YOLOv8.
Dataset: Roboflow littering dataset.

- **Web Development Intern**
  ClubArtizen, Hyderabad   *Jan 2024 – Aug 2024*
  - Optimized D2C customer engagement on ClubArtizen's website by enhancing user touchpoints and implementing interactive features to improve retention and satisfaction.
  - Automated order notifications and introduced a loyalty-driven Freebie System to incentivize repeat purchases and boost customer lifetime value.

Tech Stack: MongoDB, Express.js, React.js, Node.js (MERN), Wordpress, Woocommerce, Web APIs

- **XV6-MIT and Networking**
  Under the supervision of Prof. Karthik Vaidhyanathan at IIIT Hyderabad   *Jan 2024 - Apr 2024*
  - Modified and extended the XV6 operating system to implement OS concepts like scheduling, system calls, and memory management.
  - Integrated networking protocols to explore inter-process communication and networking functionalities in a Unix-like environment.

MAJOR COURSES TAKEN

- **Computer Science**: Responsible & Safe AI Systems, , Machine Learning, Data Structures and Algorithms, Algorithm Analysis and Design, Operating Systems, Database Management Systems, Computer Programming,

- **Computational Sciences**: Computing in Sciences, Advanced Bioinformatics, Statistical Mechanics, Reaction Dynamics, Systems Biology

- **Maths**: Real Analysis, Discrete Structures, Linear Algebra, Probability and Random Processes

HONORS & AWARDS

- Secured *AIR 446* in *KVPY* (Kishore Vaigyanik Protsahan Yojana), National Fellowship program of the Department of Science and Technology, Govt. of India for the year 2020-21.
- Presented a research paper titled *Matrix Models in Population Dynamics: Exploring Structure and Applications* in 3rd International Conference on Recent Advances in Sustainable Environment *(RAISE-2024)* held at Himachal Pradesh University Shimla, India on 22-23 November 2024.
- Presented a research paper titled *Significance of Hybrid Manufacturing and its Technologies in the field of Manufacturing and Design Industry* in 3rd International Conference on Recent Advances in Sustainable Environment *(RAISE-2024)* held at Himachal Pradesh University Shimla, India on 22-23 November 2024.
- Top 5 for Megathon 2023 (out of 100+ participants) at IIIT Hyderabad.
- Secured 163 marks out of 198 in *NTSE Punjab (Stage-1)* in the year 2020.
- Secured German State Silver Medal in Table Tennis Doubles for the year 2015.
- Attended and served in Apahaj Ashram, Jalandhar (Old Age Home) and provided selfless service to community for the year 2025.