Yash Bhisikar

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EDUCATION

BITS Pilani, *Bachelor of Engineering in Computer Science (Hons), Minor in Data Science* 08/2021 – 07/2025
- **CGPA: 9.41 (distinction)**; **Minor GPA: 9.8/10; Coursework**: [**Computer Science**] Operating Systems, Computer Architecture, Computer Networks, Database Systems, DSA, Distributed Systems. [**Data Science**] Reinforcement Learning, Machine Learning, Applied Statistical Methods, AI, Linear Algebra. Awarded **Merit Scholarship (top 2% in a batch of 735 students)** for 6 semesters for academic performance

PREPRINTS AND PUBLICATIONS

Learning what to say and how precisely: Efficient Communication via Differentiable Discrete Communication Learning, *Paper Link*
Under review @ **ICLR'26** - Aditya Kapoor, **Yash Bhisikar**, Benjamin Freed, Jan Peters, Mingfei Sun

STREAM: A Universal State-Space Model for Sparse Geometric Data, *NeVI Workshop @ ICCV'25, Paper Link*
Mark Schöne*, **Yash Bhisikar***, Karan Bania*, Khaleelulla Khan Nazeer, Christian Mayr, Anand Subramoney, David Kappel (* - Equal Contribution)

SandDune: Single Antenna Device for Detecting User's Natural Eating Habits, *IEEE Percom 2025, Paper Link*
Runner-up for Best Paper in WiP track. Shreyans Jain, **Yash Bhisikar**, Surjya Ghosh, Timothy Pierson, Sougata Sen

Does Varying BeeGFS Configuration Affect the I/O Performance of HPC Workloads?, *REX-IO Workshop, IEEE Cluster 2023, Paper Link*
Arnav Borkar, Joel Tony, Hari Vamsi K. N, Tushar Barman, **Yash Bhisikar**, Sreenath T. M., Arnab K. Paul

Gradient-Based Optimisers Versus Genetic Algorithms in Deep Learning Architectures: A Case Study on Rainfall Estimation Over Complex Terrain, *Abstract - EGU General Assembly 2024, Paper Link*
Yash Bhisikar*, Nirmal Govindaraj*, Venkatavihan Devaki*, Ritu Anilkumar

CountCLIP - [Re] Teaching CLIP to Count to Ten, *Under review at ReScience C (Reproducibility Journal), Paper Link*
Harshvardhan Mestha, Tejas Agarwal, Karan Bania, Shreyas V, **Yash Bhisikar**

EXPERIENCE

e6data, *Performance and Research Engineer* Present | Bangalore, India
- Implemented **prefix-coded strings** in query engine, optimizing columnar memory layout to reduce **object overhead** and **cache misses**
- Designed a custom serialization protocol for strings, **reduced wire payload size by 40%** and boosted **distributed shuffle throughput by 10x**
- Developed a **query compilation layer** in **Rust** that lowers e6data's custom **Calcite** logical plans into **Apache DataFusion's** physical plans

University of Manchester, *Research Collaborator* | *Code* Remote
- Developed a Multi-Agent RL comms framework allowing backpropagation through discrete, unbounded channels via **stochastic quantization**
- Derived a **differentiable loss function** that minimizes bit-length, enabling agents to learn **adaptive, variable-precision** comms protocols.
- Engineered a **plug-and-play** layer that reduced communication bandwidth by **1-3 orders of magnitude** across 4 SOTA algorithms (IC3Net, TarMAC, GA-Comm, MAGIC) while matching or exceeding task performance (e.g **+467% success** in Google Research Football).

Technische Universität Dresden, *DAAD-WISE Fellow & Research Intern* | *Code* Dresden, Germany
- Developed a **novel parametrization for Mamba** to encode sparse geometric data from point-clouds, enabling **efficient sequence modelling**
- Modified the **original Mamba C++/CUDA kernels**, **ported PointMamba to JAX**, and presented our work at IndoML'24.
- Achieved **SOTA** results on DVS-Gesture, and improved performance by **~2%** over vanilla Mamba-based models on ModelNet40/ScanObjectNN

APP Center for AI Research, *Student Researcher* | *Code* Goa, India
- **Pruned neural networks** post-training using **Granger Causality** to model relationship of weight fluctuations and loss across epochs.
- Evaluated impact on **feature importances using SHAP**, with a comparative analysis against L0, L1, rank-based, and LC-Algorithm approaches for **model compression efficiency.**

North Eastern Space Applications Centre, *Summer Intern* | *Report* Meghalaya, India
- Developed spatio-temporal **rainfall prediction models** using **UNets and LSTMs** on the ERA5 Land Reanalysis dataset for hilly terrains
- Investigated **Genetic Algorithms** as an alternative to gradient descent for model optimization. **Abstract** accepted at EGU General Assembly

SELECTED PROJECTS

Grasping Graphormer: Assessing Transformer Performance for Graph Representation, *Blogpost-Tutorial Track, GRAM Workshop @ ICML 2024*
- Co-authored a deep dive of Graphormer architecture, detailing spatial/centrality/edge encoding mechanisms and showing how **transformer attention with learnable bias terms** can subsume GCN/GraphSAGE/GIN as special cases

Dynamic File Striping Configuration for HPC Storage, *Data, Systems and HPC Lab @ BITS Goa*
- Implemented a cluster-aware **file-level adaptive striping framework** for parallel file systems at HPC clusters (Lustre, BeeGFS)

- Developed a syscall interceptor & using Darshan logs to **automate file-level striping** based on **access patterns** derived from IOR benchmarks

Indian Sign Language Recognition using Graph Neural Networks, *SenseLab @ BITS Goa* | *Code*
- Replaced heavy CNN encoders with a lightweight **Spatio-Temporal Graph Convolutional Network** to work on resource-constrained devices
- Created a **dockerized** training environment, achieved **~88% test accuracy** on 263 classes of INCLUDE dataset using lesser trainable params

Relational Sum-Product Networks, *Paper Implementation* | *Code*
- Developed an implementation based on the RSPN paper that enables tractable probabilistic inference for cardinality estimation and conditional expectation in database query optimizers. Languages used: **C++** and **Java**
- Automated structure learning pipeline using **Randomized Dependence Coefficients (RDC)** and adaptive **K-Means++ clustering,** achieving efficient **decomposition of high-dimensional multivariate distributions** into tractable hierarchical models.

University Rover Team, *Software Team Member*
- Developed a monocular **visual servoing system** for autonomous navigation using a custom trained **YOLOv3** for object detection
- Implemented a **PID-controlled GPS navigation system**, enabling precise rover traversal between nearby local coordinates

Zero Shot Segmentation on Arbitary Image-Text Prompts using Clip
- Implemented **text-guided segmentation** for open-vocabulary object recognition using CLIP embeddings with **Featurewise Linear Modulation** for cross-modal conditioning and a **transformer decoder** for binary mask prediction

SKILLS

Programming Languages: Proficient : Python | Comfortable: Rust, Java, C/C++, SQL, Bash, LaTeX | Learning: Go

Softwares/Libraries: PyTorch, JAX, Flax, NumPy, Pandas, HuggingFace, Weights and Biases, Slurm, Anaconda, GitHub, GitLab, SciKit-Learn, Docker, CMake, Maven, Gemini, Claude & OpenAI APIs, Jupyter Notebooks

TEACHING EXPERIENCE

- Teaching Assistant for courses: **Computer Architecture** (Fall '24), **Machine Learning** (Fall '24) and **Discrete Math** (Fall '23)
- Conducted tutorial sessions, evaluated and graded assignments, designed labs and guided students through the TA hours

LEADERSHIP POSITIONS

Society for Artificial Intelligence and Deep Learning, *Vice-President*
- Presented papers in reading sessions, formulated induction assignments, conducted courses and organized an AI Symposium
- Contributed to an open-source reproducibility project (29 stars on Github), organized an hackathon and started a blogposts initiative

The Literary and Debating Club, *Core Member*
- Organized weekly debates, book-clubs, writing sessions and special events during college fests for the student-run club of ~80 members
- Hosted Nagpur regionals of Inverse, a nation-wide slam poetry contest. Participated in parliamentary debate tournaments representing BITS

AWARDS AND ACHIEVEMENTS

DAAD-Wise Fellowship 2024, *One of 235 fellows selected from India to carry out fully funded research at TU Dresden, Germany. Certificate*

MITACS Globalink Scholarship 2024, *Selected for a fully funded research at Université Laval, among over 30,000 applicants. Certificate*

Google DeepMind Research Symposium, *One of the 150 undergrads selected across India for the conference*

Amazon Scholar for the Graduate Forum at IndoML'24, *One of the 6 people selected from BITS Goa*

KVPY Fellowship, *National Program of Fellowship in Basic Sciences, initiated and funded by the Government of India*

Indian Olympiad Qualifer in Chemistry - State Topper, *Qualifier exam for the Indian National Chemistry Olympiad*

TEST SCORES

JEE Mains
All India Rank 935 among 1.1 million candidates, 99.935 percentile

JEE Advanced
All India Rank 1938 among 100,000 candidates

MHT-CET
99.995 percentile among 400,000 candidates

KVPY-SX
All India Rank 1438 among ~50,000 candidates