ARNAB PHANI

# Berlin, Germany

Email: [phaniarnab@gmail.com](mailto:phaniarnab@gmail.com), arnab.phani@tu-berlin.de   
Website: <https://phaniarnab.github.io/>

## EDUCATION

### PhD in Computer Science April 2019 - Present

TU Berlin, Germany

*Dissertation title*: “Fine-grained Reuse and Feature Transformations in Machine Learning Systems”

*Supervisor*: [Matthias Boehm](https://mboehm7.github.io/)

### M.Tech in Software Systems. 2014 – 2016

Birla Institute of Technology and Science (BITS), Pilani.

*CGPA*: 9.02

*Dissertation title*: “Commit Time Materialized View Maintenance for Bulk Load Operations in Teradata”

## SUMMARY

I specialize in Data Management. During my PhD, I explored different aspects of the ML **system internals** to address high computational redundancy. I am an active PMC member and a regular contributor to **Apache SystemDS**, a leading open-source system for end-to-end data science. In addition, I have a strong background in relational database systems having worked extensively on the **query engine** of **Teradata** prior to my PhD.

## SELECTED PROJECTS / PUBLICATIONS

* Holistic Lineage-based **Reuse and Memory Management** for Multi-backend ML Systems (EDBT 2025).
* **Parallelization Strategies** for Feature Transformations in Machine Learning Workloads (PVLDB 2022).
* Fine-grained **Lineage Tracing** and Reuse in Machine Learning Systems (SIGMOD 2021).
* SystemDS: A **Machine Learning System** for the End-to-End Data Science Lifecycle.
* Commit Time **Materialized View Maintenance** for Bulk Load Operations in Teradata (ICECCT 2019).

## RESEARCH & INDUSTRY EXPERIENCE

### Research Assistant April 2019 - Present

*TU Berlin, Germany, TU Graz, Austria*

* Primary contributor to [Apache SystemDS](https://github.com/apache/systemds), an open-source end-to-end ML system.
* ML system internals from compiler to multi-backend runtime (CPU, Spark, GPU).

### Sr. Software Engineer July 2010 – March 2019

*Teradata Labs, India*

* Contributed to query execution engine of **Teradata database**.
* Design and implementation of [Read Committed isolation level](https://docs.teradata.com/r/SQL-Request-and-Transaction-Processing/June-2020/Transaction-Processing/Load-Isolation), [Fast Column Add](https://support.teradata.com/knowledge?id=kb_article_view&sys_kb_id=efaf66dc47c2655886f3405c346d4346), [Global Space Accounting](https://docs.teradata.com/r/Enterprise_IntelliFlex_VMware/Database-Administration/Managing-Space-Operational-DBAs/Global-Space-Accounting), and many other features.

## TEACHING & OPEN-SOURCE CONTRIBUTIONS

* **Teaching Assistant:** Architecture of DB Systems, and Data Integration and Large-scale Analysis courses.
* **Talks:** SIGMOD 2021, VLDB 2022.
* **Invited Talks:** A Tutorial Workshop on ML for Systems and Systems for ML, BTW 2023.
* **Apache SystemDS**: PMC member and Release Manager (2.0, 2.1) of Apache SystemDS.
* **Reproducibility:** Availability and reproducibility of [all paper experiments](https://github.com/damslab/reproducibility/tree/master).
* **Benchmarks:** FTBench [benchmark](https://www.vldb.org/pvldb/vol15/p2929-phani.pdf) for feature transformation workloads with [reference implementations](https://github.com/damslab/reproducibility/tree/master/vldb2022-UPLIFT-p2528/FTBench).

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