ARNAB PHANI

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EDUCATION

PhD in Computer Science   **April 2029 - Present**
TU Berlin, Germany
   Dissertation title: "Reuse, Parallelization and Memory Management for Multi-backend ML Systems"
   Supervisor: Matthias Boehm

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"

RESEARCH INTERESTS

My research interest lies broadly in the intersection of Data Management, Machine Learning and Systems, an emerging area referred to as Systems for ML or ML Systems. I explore different aspects of the ML system internals to address high computational redundancy. In particular, I am implementing a novel framework for efficient, fine-grained lineage tracing and multi-backend reuse of intermediates inside ML systems.

SELECTED PUBLICATIONS

- **Arnab Phani** et al. 2024. MUMBAI: Lineage-based Reuse and Related Memory Management for Multi-backend ML Systems. Under submission.
- **Arnab Phani** et al. 2022. UPLIFT: Parallelization Strategies for Feature Transformations in Machine Learning Workloads. In PVLDB.
- **Arnab Phani** et al. 2021. LIMA: Fine-grained Lineage Tracing and Reuse in Machine Learning Systems. In SIGMOD.
- Matthias Boehm et al. 2020. SystemDS: A Declarative Machine Learning System for the End-to-End Data Science Lifecycle. In CIDR.
- **Arnab Phani**, Chandrasekhar Tekur, RKN Sai Krishna. 2019. Commit Time Materialized View Maintenance for Bulk Load Operations in Teradata. In ICECCT.

RESEARCH & INDUSTRY EXPERIENCE

Research Assistant   **April 2019 - Present**
TU Berlin, Germany, TU Graz, Austria
- Primary contributor to Apache SystemDS, an open source end-to-end ML system.
- Contributing to ML system internals from compiler to multi-backend runtime.

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, Fast Column Add, 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.
- **Experiments:** Availability and reproducibility of all paper experiments.
- **Benchmarks:** FTBench benchmark for feature transformation workloads with reference implementations.

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