Eleni Zapridou

Contact information

Email:
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Address:
Lausanne, Switzerland

Skills

- Programming skills: Java, C++, Flink, Spark, Python, C, SQL, HTML, Javascript, CSS
- Languages: Greek (native), English (fluent), French (conversational)

Hobbies

I enjoy carpentry, playing the flute and skiing.

Education

Ph.D., Computer Science

École polytechnique fédérale de Lausanne (EPFL) | September 2020 - Present | Lausanne, Switzerland

- Data-Intensive Applications and Systems laboratory / Advisor: Ailamaki Anastasia
- Recipient of the EDIC fellowship from the department
- Received teaching award

Bachelor of Science, Computer Science

Aristotle University of Thessaloniki (AUTh) | September 2016 - June 2020 | Thessaloniki, Greece

- Ranked 1st among 120 students admitted
- GPA: 9.48/10 (top of the class)
- Awarded the Hypatia Prize
- Member of the ACM AUTh Student Chapter, Machine learning team

Exchange semester (& collaboration for BS Thesis)

Technische Universität Wien (TUW) | September 2019 - February 2020 | Vienna, Austria

High School

Aristotelio College | September 2013 - June 2016 | Thessaloniki, Greece

- GPA: 20.0/20.0
- Received full scholarship

Experience

Research Intern Microsoft Research | June - September 2023
Worked on disaggregated memory for database systems.
Supervised by Dr. Vivek Narasayya, Manoj Syamala and Dr. Yi Shan

Research Intern EPFL | July - September 2019
Developed an interactive scale-out data cleaning approach that supports rule discovery over dirty data. We apply semi-automatic functional dependency discovery while reducing human effort. We guide data exploration by sampling interesting tuples, which maximize knowledge for rule discovery, and we provide probabilistic candidate repairs.
Supervised by Prof. Anastasia Ailamaki and Dr. Stella Giannakopoulou

Selected Publications

Process Faster, Pay Less: Functional Isolation for Stream Processing - Under review
Eleni Zapridou, Michael Koepf, Panagiotis Sioulas, Ioannis Mytilinis, Anastasia Ailamaki

Traditional work-sharing techniques reduce resource utilization but introduce query interdependencies, leading to degraded performance for certain queries. We introduce a stream-processing system that achieves efficient resource utilization without performance penalties by dynamically deciding which sharing opportunities to leverage.

Oligolithic Cross-Task Optimizations across Isolated Workloads - CIDR'2024
Eleni Zapridou, Panagiotis Sioulas, Anastasia Ailamaki

We make a case for functional isolation: systems must enable cross-query optimizations under the condition that they guarantee performance isolation. We make an initial step towards realizing functional isolation by addressing the long-standing problem of work-sharing with fairness requirements.

Dalton: Learned Partitioning for Distributed Data Streams - VLDB'2023
Eleni Zapridou, Ioannis Mytilinis, Anastasia Ailamaki

We propose a lightweight, adaptive, yet scalable partitioning operator that relies on reinforcement learning. By continuously evaluating its decisions, our operator i) adjusts its policy at runtime, ii) minimizes the per-tuple partitioning overhead, and, iii) efficiently scales out to multiple instances that learn cooperatively and converge to a joint policy.

Improving k-means clustering using speculation - AIDB'2023 @ VLDB
Stefan Igescu, Viktor Sanca, **Eleni Zapridou**, Anastasia Ailamaki

We examine the use of speculation techniques to expedite the convergence of the iterative k-means algorithm without affecting the accuracy of the results. We achieve this by introducing two cooperative and concurrent phases: one works on the overall input data, and the other speculates and explores the space faster using sampling.

Projects

Efficient State Management for Stream Processing Engines **work in progress**

We propose novel prefetching and caching techniques that employ information from the data, the query and the processing model to maximize cache utilization.

Optimization of Complex Imperative Analytical Programs **work in progress**

We propose a holistic optimizer that minimizes end-to-end execution time for imperative programs that contain SQL statements.

Performance Analysis of Windowed Range Joins **work in progress**

We analyze and improve existing algorithms for in-memory windowed range joins.

Entity Resolution System **ACM Sigmod Programming Contest 2021**

We worked on the task of Entity-Resolution on real-world e-commerce datasets. For our final solution we used the blocking technique and agglomerative clustering.

Talks & Poster Presentations

- **Distributed Systems Called: They're Here to Save AI**
  - CIDR, 2025
- **Oligolithic Cross-Task Optimizations across Isolated Workloads**
  - CIDR, 2024
  - EPFL Open House, 2025
- **Dalton: Learned Partitioning for Distributed Data Streams**
  - HDMS Conference, 2024
  - EcoCloud Annual Event, 2024
  - EPFL Open House, 2024
  - VLDB Conference, 2023
  - Microsoft Research, 2023
  - TU Darmstadt, 2023
  - SPP Summer School, 2022

Teaching Experience

- Data-intensive systems, 2024 - Head teaching assistant
- Introduction to database systems, 2021, 2022, 2023 - Teaching assistant
- Introduction to programming, 2021, 2022 - Teaching assistant
- Information, Computation, Communication, 2024 - Teaching assistant