Dimitris Tsitsigkos

Software Engineer (PhD)

dtsitsigkos | dtsitsigkos.github.io | DBLP | Google Scholar | dtsitsigkos
tsitsigkosdim@gmail.com | +30 6942951698

Summary

Software Engineer with a background in data management and parallel computing. Experienced in the design and implementation of in-memory indexing techniques that accelerate query performance for single and multi-dimensional data. Focuses on developing scalable data systems and performance-critical algorithms in C++, Java, and Python, leveraging parallelism and memory-efficient designs to solve complex data challenges.

Work Experience

Archimedes Research on AI, Data Science and Algorithms, Greece Feb 2025 - present

Postdoctoral Researcher

- Member of the Data Science and Engineering team, focusing on multi-dimensional and vector data.
- Researching and implementing indexing techniques to accelerate query performance for multi-dimensional and vector data, leveraging hardware acceleration and multi-core parallelism.
- Technologies: C++, openMP, SIMD.

Dept. of Computer Science & Engineering, Univ. of Ioannina, Greece Jan 2024 – Dec 2024

Doctoral Researcher

Participated in the Greek funding project MESA: In-memory Spatial Analytics Made Scalable

- Implemented novel parallel and non-parallel index structures for spatial queries, including spatial join, range queries, and k-NN.
- Contributed to the design and development of a prototype distributed spatial data management framework using MPI and OpenMP.
- Technologies: C++, OpenMP, MPI.

Information Management Systems Institute, Athens, Greece Dec 2012 – Dec 2023

Software Engineer

Participated in several Greek and European funding projects, including:

- MORE: Management of Real-time Energy data.
  (Oct 2020 – Dec 2023)
  - Developed a continuous evaluation module for sliding-window aggregations to process sensor data at the edge for faster response time.
  - Implemented parallel and distributed pattern extraction methods to improve the efficiency of large-scale time series analytics.
  - Technologies: Java, Python, Dask.
- Amnesia: A platform for anonymizing relational, multi-dimensional, and hierarchical data.
  (Aug 2015 – Sep 2020)
  - Led the design and development of the data privacy platform from scratch.
  - Technologies: Java, Spring, RESTful Web Services, JavaScript.
- MoDisSENSE: A Distributed Spatio-Temporal and Textual Processing Platform for Social.
  (Dec 2012 - Jul 2015)
  - Developed distributed algorithms for large-scale location data, specifically for discovering points of interest and reconstructing user trajectories from GPS traces.
  - Designed and implemented RESTful APIs supporting POI discovery and recommendation.
  - Technologies: Java, RESTful Web Services MapReduce, Hadoop, HBase, PostgreSQL.

Institute of CS, Johannes Gutenberg University Mainz, Germany May 2022 – Jul 2022

Research Visitor

- PhD internship at the Institute of Computer Science with Professor Panagiotis Bouros, focusing on spatial joins.
- Technologies: C++ and OpenMP.

Hellenic Army Information Technology Support Center, Greece Apr 2017 – Nov 2018

Software Engineer

- Maintain and update code for multiple Java applications, while developing new features.
- Technologies: Java, Oracle Database, JSF.

Awards

3rd place Future of Database Programming Contest, Athens Mar 2025

Education

PhD, Computer Science Jul 2019 – Dec 2024

Department of Computer Science & Engineering, University of Ioannina

Thesis: In-memory Indexing for Parallel Processing of Single and Multi-Dimensional Queries

M.Sc., Computing Systems: Software and Hardware, Computer Science Nov 2012 – Sep 2016

Department of Informatics and Telecommunications, University of Athens

Thesis: Complex Event Processing (CEP) for Intrusion Detection

B.Sc., Computer Science Sep 2006 – Jun 2012

Department of Informatics and Telecommunications, University of Athens

Thesis: Clustering Wikipedia resources

Technical Skills

Languages	C, C++, Java, Python
Data Management	MySQL, PostgreSQL, PostGIS, HBase
Parallel & Systems Programming:	OpenMP, SIMD, MPI
Distributed Data Frameworks:	Hadoop, Spark, Dask
Web & Frameworks:	Spring, RESTful Web Services, JavaScript, JSP, JSF
Operating Systems:	Ubuntu, Microsoft Windows, macOS

Selected Publications

Dimitrios Tsitsigkos, Achilleas Michalopoulos, Nikos Mamoulis, and Manolis Terrovitis (2026). "B^S-tree: A gapped data-parallel B-tree". In: *IEEE International Conference on Data Engineering, (ICDE).*

Dimitrios Tsitsigkos, Panagiotis Bouros, Konstantinos Lampropoulos, Nikos Mamoulis, and Manolis Terrovitis (2024). "Two-Layer Space-Oriented Partitioning for Non-Point Data". In: *IEEE Transactions on Knowledge and Data Engineering (TKDE).*

Panagiotis Bouros, Nikos Mamoulis, Dimitrios Tsitsigkos, and Manolis Terrovitis (2021). "In-Memory Interval Joins". In: *VLDB J.*

Dimitrios Tsitsigkos, Konstantinos Lampropoulos, Panagiotis Bouros, Nikos Mamoulis, and Manolis Terrovitis (2021). "A Two-layer Partitioning for Non-point Spatial Data". In: *IEEE International Conference on Data Engineering, (ICDE).*

Other

Languages	Greek (native), English (Advanced)
Volunteer	European Data Forum 2014, EDBT/ICDT 2023 Joint Conference, 6th ACM Europe Summer School on Data Science 2025, HDMS 2025.