

# Dimitris Tsitsigkos

Software Engineer (PhD)

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## 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.

**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 &amp; 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 &amp; Systems Programming:

OpenMP, SIMD, MPI

Distributed Data Frameworks:

Hadoop, Spark, Dask

Web &amp; 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<sup>S</sup>-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

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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.