# Thanasis Georgiadis

Software Engineer

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## SUMMARY

I earned my integrated MSc in Computer Science and Engineering from the University of Ioannina in 2021, specializing in big data management and parallel/distributed programming. Shortly after, I began my PhD, focusing on data management, distributed systems, parallel programming, query optimization, and spatial databases.

EXPERIENCE

ARCHIMEDES unit of Athena Research Center, Athens Research Intern	July 2024 – Present	
<ul> <li>Retrieval-Augmented Generation and Database Systems for AI.</li> <li>Natural Language Processing for spatial reasoning.</li> </ul>		
<ul> <li>Huawei Technologies R&amp;D (UK) Ltd, Edinburgh Research Intern</li> <li>Designed and implemented query processing features for a large-scale, production-grade graph database.</li> <li>Alleviated concurrency and scalability related challenges in a multi- threaded database system environment.</li> </ul>	September 2023 – February 2024	
<ul> <li>MESA: In-memory Spatial Analytics Made Scalable, H.F.R.I. Doctoral Researcher</li> <li>Designed and built a prototype distributed spatial data management system using MPI and OpenMP.</li> <li>Designed and implemented novel techniques for scalable spatial query processing.</li> </ul>	September 2021 – Present	
PhD in Scalable Big Spatial Data Management	July 2021- September 2025	
Department of Computer Science & Engineering, University of Ioannina, Greece		
<b>Integrated MSc in Computer Science &amp; Engineering</b> Department of Computer Science & Engineering, University of Ioannina, Greece	September 2015 – June 2021	

# **RESEARCH & PROJECTS**

#### **Distributed Systems**

Designed and implemented a prototype distributed spatial data management system in C++ using OpenMP and MPI, for scaling spatial query processing both vertically and horizontally. Notable features include easy and quick installation and usage, lightning-fast query processing and good scalability.

• T. Georgiadis et al., Hecatoncheir: Scaling up and out spatial data management (Under Submission).

#### **Query Processing**

The following papers include novel techniques for scalable spatial data management of complex polygons. The approaches utilize raster-based approximations, interval processing and bitwise operations for improving query processing performance on spatial databases.

- T. Georgiadis and N. Mamoulis, Scalable Spatial Topology Joins, EDBT 2026, Tampere, Finland, 2026.
- T. Georgiadis, E. Tzirita Zacharatou and N. Mamoulis, Raster Interval Object Approximations for Spatial Intersection Joins, The VLDB Journal, 2025.
- T. Georgiadis and N. Mamoulis, Raster Intervals: An Approximation Technique for Polygon Intersection Joins, Proceedings of the ACM Conference on Management of Data (SIGMOD), Seattle, WA, 2023.

#### **Retrieval-Augmented Generation**

Worked on Retrieval-Augmented Generation techniques for enhancing the spatial reasoning capabilities of Large Language Models. Worked deeply on database-LLM interaction challenges with a focus on RDF graph indexing, similarity search, information retrieval techniques and generation evaluation methods and benchmarks for spatial reasoning.

• T. Georgiadis et al., SpaRAGraph: Spatial Reasoning using Retrieval-Augmented Generation (Under Submission).

### TECHNICAL SKILLS

Programming Languages	C/C++ (Expert), Python, Java
Technologies & Tools	OpenMP, MPI, Bash, GIS, git
OTHER	
Languages	Greek (native), English (fluent), French (basic)
Personal Interests	Guitar, Painting, Board games
Awards	3rd place - Future of Database Programming Contest (March 2025, Athens).