

George Christodoulou

 George Christodoulou |  giorgoschristodoulou.github.io |  g.c.christodoulou@tudelft.nl |  Google Scholar

Education

Ph.D. in Database Systems (summa cum laude)

Mar 2020 - Sep 2023

University of Ioannina

Ioannina, Greece

Topic: “Interval Data Management in Main Memory”

Supervisor: Nikolaos Mamoulis

M.Sc. in Computer Science (summa cum laude)

Sep 2018 - Feb 2020

University of Ioannina

Ioannina, Greece

Thesis: “A Prefix-based Hybrid Solution for Main Memory Indexing”

Supervisor: Nikolaos Mamoulis

Diploma (M.Eng.) in Computer Science & Engineering

Sep 2011 - Sep 2017

University of Ioannina

Ioannina, Greece

Thesis: “Routing Methods with Machine Learning on Delay Tolerant Networks.”

Supervisor: Evangelos Papapetrou

Employment

Postdoctoral Researcher

Oct 2023 – Present

Delft University of Technology

Delft, Netherlands

- Research line: Revisiting data access paths and patterns for transactional Cloud applications.
- Working on stream processing, distributed database systems, transactions, fault tolerance and stateful serverless
- Mentoring PhD and MSc students; authoring scientific papers; co-teaching Web-scale Data Management (MSc) and Information and Data Management (BSc).

Research Program Scholar

May 2020 - Jul 2023

Organization of Special Account of Research Funds, University of Ioannina

Ioannina, Greece

- Smart City Bus Project (IoT Platform for Transportation)
- ProximIoT Project (IoT Platform for Proximity Marketing)

Research Assistant

May 2019 – Sep 2019

Research & Technology Hellas (CERTH)

Thessaloniki, Greece

- Worked on designing and developing an anomaly detector with machine learning for the “Secure and Safe IoT” project.
- Used Python, PyTorch, Tensorflow.

Software Engineer

Jul 2016 – Aug 2016

Natech S.A.

Ioannina, Greece

- Worked on designing and developing a ASP.NET MVC web application.
- Used C#, MVC

Publications

Selected Publications

- **Styx: Transactional Stateful Functions on Streaming Dataflows**
K. Psarakis, **G. Christodoulou**, G. Siachamis, M. Fragkoulis, A. Katsifodimos
ACM International Conference on Management of Data (**SIGMOD**) 2025, (**CORE A***).

- **LIT: Lightning-fast In-memory Temporal Indexing**
G. Christodoulou, P. Bouros, N. Mamoulis.
ACM International Conference on Management of Data (**SIGMOD**) 2024, (**CORE A***).
- **HINT: A Hierarchical Index for Intervals in Main Memory**
G. Christodoulou, P. Bouros, N. Mamoulis.
ACM International Conference on Management of Data (**SIGMOD**) 2022, (**CORE A***).

Other Publications: International Journals

- **Querying Interval Data on Steroids**
P. Bouros, G. Christodoulou, C. Rauch, A. Titkov, N. Mamoulis.
Transactions on Knowledge and Data Engineering (**TKDE**), (**CORE A***).
- **HINT: A Hierarchical Interval Index for Allen Relationships**
G. Christodoulou, P. Bouros, N. Mamoulis.
International Journal on Very Large Databases (**VLDBJ**) 2023, (**CORE A***).

Other Publications: International Conferences

- **Transactional Cloud Applications Go with the (Data)Flow**
K. Psarakis, G. Christodoulou, M. Fragkoulis, A. Katsifodimos.
Conference on Innovative Data Systems Research (**CIDR**) 2025, (**CORE A**).
- **Transactional Cloud Applications: Status Quo, Challenges, and Opportunities**
R. Laigner, G. Christodoulou, K. Psarakis, A. Katsifodimos, Yongluan Zhou.
ACM International Conference on Management of Data (**SIGMOD**) 2025 (Tutorial), (**CORE A***).
- **Evaluating Stream Processing Autoscalers**
G. Siachamis, G. Christodoulou, K. Psarakis, M. Fragkoulis, A. van Deursen, A. Katsifodimos.
International Conference on Distributed and Event-based Systems (**DEBS**) 2024.
- **HINT on Steroids: Batch Query Processing for Interval Data**
P. Bouros, A. Titkov, G. Christodoulou, C. Rauch, N. Mamoulis.
International Conference on Extending Database Technology (**EDBT**) 2024, (**CORE A**).
- **SmartCityBus - A Platform for Smart Transportation Systems.**
G. Bouloukakis, C. Zeginis, N. Papadakis, K. Magoutis, G. Christodoulou,
C. Kosyfaki, K. Lampropoulos, N. Mamoulis
ACM International Conference on Web Search and Data Mining (**WSDM**) 2023 (abstract), (**CORE A**).

Other Publications: International Workshops

- **Efficient And Scalable Management Of Interval Data**
G. Christodoulou
International Conference on Extending Database Technology PhD Workshop (**EDBT**) 2023, (**CORE A**).

Teaching

| | |
|--|---------------------------|
| Delft University of Technology | Oct 2023 – Present |
| Electrical Engineering, Mathematics & Computer Science Department | <i>Delft, Netherlands</i> |

- Spring 2024 co-teaching Web-scale Data Management (MSc).
- Spring 2024 co-teaching Information and Data Management (BSc).

| | |
|---|-------------------------|
| University of Ioannina | Sep 2017 - July 2023 |
| Department of Computer Science and Engineering | <i>Ioannina, Greece</i> |

- Spring 2023 co-teaching Complex Data Management (BSc).
- Fall 2020-2022: Python lab assistant; Spring 2018: Java lab assistant; Fall 2017-2019: Networks lab assistant.

Student Supervision

PhD

- Oto Mraz, Evaluating Deterministic Database Sequencers, TU Delft
- Marcus Schutte, Compiling Actors to Stateful Streaming Programs, TU Delft
- Kyriakos Psarakis, Democratizing Scalable Cloud Applications, TU Delft
- George Siachamis, Adaptivity for Streaming Dataflow Engines, TU Delft, **grad. 2024**

MSc

- Lucas Van Mol, Intermediate representation for dataflows, TU Delft
- Smruti Kshirsagar, Efficient queries in external data stores, TU Delft
- Mitali Patil, Global state queries in stream processing, TU Delft
- Giorgos Kotsinas, Ranking queries over range data, UoI, **grad. 2024**

Bachelor

- Sebastian Hemberger, Indexing composite interval data, JGU, **grad. 2024**
- Dennis Scheck, Generating and visualizing complex interval data, JGU, **grad. 2024**
- Jan Raider, A graphical user interface for managing interval data, JGU, **grad. 2024**
- Vasileios Georgoulas, A web application for passenger movement with public transport, UoI, **grad. 2023**
- Danae Tsaousi, Visualization and analysis of public transport data, UoI, **grad. 2023**
- Penelope Eleftheriadi, Visualization and analysis of public transport data, UoI, **grad. 2023**
- Filippos Papachristou, Implementation and evaluation of a main memory temporal index, UoI, **grad. 2023**

Research Internships

Research Visit

Jan 2023 - Feb 2023

Hong Kong University of Science and Technology (HKUST)

Hong Kong

- Working on query optimization for multiversion data with Prof. Papadias.

Research Visit

Feb 2022 - Apr 2022

University of Mainz (JGU)

Mainz, Germany

- Working on query optimization for Allen's predicates with Prof. Bouros.

Software

- “[HINT](#)” is a novel in-memory index for intervals, with a focus on overlap queries along with Allen's algebra predicates. The intervals are stored as binary representations in a hierarchy of partitions. Multiple optimizations add to efficient storage consumption, sparsity&skewness handling, and fast look-ups. Code is written entirely in CPP.
Note: Github repo is used only for release, development was done in private.
- “[LIT](#)” is a novel hybrid index, decoupling the management of the current and past states of an indexed column. The method includes optimized indexing modules for fast look-ups and update-heavy workloads. While multiple implementations were benchmarked for handling both parts, the best performing combination of structures is *i)* a custom hash-index optimized for non-random accesses on range queries for current records, *ii)* an hierarchical index inspired from HINT for the past records. Code is written entirely in CPP.
Note: Github repo is used only for release, development was done in private.

Service

- Reviewer for PAKDD 2021, ICDE 2024, DEBS 2024, VLDB 2025-2026, EDBT 2026, Frontiers in Big Data Journal
- External Reviewer for ICDE 2019-2023, VLDB 2020-2024, SIGMOD 2020, EDBT 2020, DASFAA 2023
- Conference Volunteer at EDBT 2023, Ioannina, Greece

Technical Skills

Programming Languages: C/C++ (advanced), Java (intermediate), Python (intermediate).

Other Skills: Complex data management, Complex data indexing, Scalable Data Management, Query Processing, Stream Processing, Machine learning techniques, ASP.NET MVC

Languages

Greek (Native speaker), Dutch (Native speaker), English (Full Professional Proficiency).