Chrysanthi Kosyfaki

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About me

My research interests lie in the area of spatiotemporal data management and flow analytics in large graphs, with a particular focus on a new class of networks called Temporal Interaction Networks (TINs). These networks model dynamic systems where entities exchange quantities, such as financial transactions, transportation flows, or communication data.
Over the past few years, I have been developing efficient solutions to optimize classical problems—such as max-flow computation—by introducing the temporal dimension. Currently, my work focuses on data provenance analytics in large graphs, with an emphasis on designing techniques to trace the origin of transmitted quantities in graph-structured data.
Recently, I have also started exploring the Text-to-SQL domain, focusing on addressing challenges related to text ambiguity in natural language database queries.

Employment

Hong Kong University of Science and Technology, Hong Kong SAR *May 2025 – present*
Postdoctoral research fellow, CSE Department
- Working on projects related to spatiotemporal data management and data provenance on graphs

University of Hong Kong, Hong Kong SAR *Feb. 2026 - March 2026*
Guest Lecturer, CS Department
- Teaching a course at the master program of the department

University of Hong Kong, Hong Kong SAR *Jan. 2025 – May 2025*
Part-time Lecturer, CS Department
- Taught a course at the master program of the department

University of Hong Kong, Hong Kong SAR *Aug. 2023 – Apr. 2025*
Postdoctoral research fellow, CS Department
- Worked on projects related to spatiotemporal data management and graph analytics

University of Hong Kong, SAR *Jun. 2022 – Oct 2022*
Research Assistant, CS Department
- Worked on developing spatiotemporal data management algorithms for a funding project with MTR

University of Ioannina, Greece *Oct 2020 – May 2023*
Software Developer, CSE Department
- Worked on a research funding project called SmartCityBus.

University of Ioannina, Greece *Apr. 2020 – Sept 2020*
Software Developer, CSE Department
- Worked on a research funding project called ProximIoT.

University of Hong Kong, SAR *Aug 2019 – Oct 2019*
Research Assistant, CS Department
- Worked on developing optimized algorithms for flow computation in temporal networks

University of Ioannina, Greece *Mar. 2019 – Jul 2019*
Software Developer, CSE Department
- Worked on a research funding project called Seek and Go.

University of Hong Kong, SAR *Aug. 2018 – Dec 2018*
Research Assistant, CS Department
- Worked on developing optimized algorithms for enumerating flow motifs in temporal networks

Education

Ionian University, Greece *Sept. 2013 – Sept 2017*
BS in Computer Science
- **Thesis**: Sentimental Analysis in Social Networks
- **Advisor**: Phivos Mylonas

University of Ioannina, Greece *Oct. 2017 – Feb 2019*
M.Sc in Computer Science
- **Thesis**: Flow Motifs in Interaction Networks
- **Advisor**: Nikos Mamoulis

University of Ioannina, Greece *Feb. 2019 – Apr 2023*
Ph.D in Computer Science
- **Thesis**: Flow Analytics in Large Graphs
- **Advisor**: Nikos Mamoulis

Academic Service

Organization Committees

Co-chair for TKDE posters @ICDE	2025-2026
Publicity chair for @MDM 2026	2026

Program Committees

PVLDB	2024-2027
ICDE	2025-2026
SIGSPATIAL	2025
VLDBJ	2024 - 2025
TKDE	2023-2025
PAKDD	2022-23

External Reviewer

ICDE	2019-2024
PVLDB	2019-2023
SIGMOD	2021-2023
EDBT	2018-2020
KDD	2019

Student Volunteer

PVLDB	2020
EDBT	2023

Awards

Christine Collet EDBT/ICDT Student Participation Award 2019 — 2019

Teaching Experience

The University of Hong Kong, SAR — *Spring 2026*
Course Title: Network Data Analytics
- *Guest Lecturer*

The University of Hong Kong, SAR — *Spring 2025*
Course Title: Network Data Analytics
- *Instructor*

University of Ioannina, Greece — *Spring 2019-2023*
Course Title: Complex Data Management
- *Teaching Assistant*

University of Ioannina, Greece — *Spring 2018*
Course Title: Object Oriented Programming
- *Teaching Assistant*

University of Ioannina, Greece — *Fall 2017-2022*
Course Title: Introduction to Programming
- *Teaching Assistant*

Highlights

Temporal Interaction Networks (TINs) Temporal Interaction Networks (TINs) are a graph-based formalism for modeling time-varying data flows. Specifically, this type of network models dynamic systems where entities exchange quantities, such as financial transactions, transportation flows, or communication data. They can be used in a variety of problems; for computing the max-flow quantity from a source to a sink vertex to tracking the origin of a transferred quantity among the vertices (provenance).

BEACON - A Benchmark for Efficient and Accurate Counting of Subgraphs BEACON is a scalable and standardized dataset designed to evaluate ML-based techniques. It provides a unified dataset with ground truth subgraphs and different types of graphs (e.g., directed and undirected, weighted and unweighted).

Skills

Programming Languages
C, C++, Python

Environments
MATLAB, Octave, QGIS, Neo4j

Operating Systems
Windows, MacOS, Linux

Publications

An (Updated) Overview of Data Provenance: Concepts, Challenges and Opportunities — **2026**
C. Kosyfaki, P. Groth - **@SIGMOD** (*as a tutorial*)

Multigranularity Spatiotemporal Flow Patterns — **2026**
C. Kosyfaki, N. Mamoulis, R. Cheng, B. Kao - under review (Geoinformatica)

Does Provenance Interact? — **2026**
C. Kosyfaki, R. Zhang, N. Mamoulis, X. Zhou - under review **@VLDB**

BEACON: A Benchmark for Efficient and Accurate Counting of Subgraphs **@ICDE** — **2026**
X. Zhu, M. Najafi, **C. Kosyfaki**, L. VS. Lakshmanan, R. Cheng

Refine or Execute? A Cost-Based Framework for Socratic Query Refinement - **under submission** **2026**
R. Zhang, **C. Kosyfaki**, Sau Lai Yip, X. Zhou

Generalized Origin-Destination-Time Flow Patterns **@SSTD** **2025**
C.Kosyfaki, N. Mamoulis, R. Cheng, B.Kao

A Sampling-based Framework for Hypothesis Testing on Large Attributed Graphs **@PVLDB** **2024**
Y. Wang, **C. Kosyfaki**, S. Amer-Yahia, R. Cheng

SmartCityBus - A Platform for Smart Transportation Systems **@WSDM** **2023**
G. Bouloukakis, C. Zeginis, N. Papadakis, K. Magoutis, G. Christodoulou, **C. Kosyfaki**,
K. Lampropoulos, N. Mamoulis

Spatiotemporal Flow Patterns **@arxiv** **2023**
C. Kosyfaki, N. Mamoulis, R. Cheng, Ben Kao

Provenance in Temporal Interaction Networks **@ICDE** **2022**
C.Kosyfaki and N. Mamoulis

Flow Provenance in Temporal Interaction Networks **@SIGMOD** (*short paper*) **2021**
C.Kosyfaki and N. Mamoulis

Flow Computation in Temporal Interaction Networks **@ICDE** **2021**
C.Kosyfaki, N. Mamoulis, E. Pitoura, P. Tsaparas

Flow Motifs in Interaction Networks **@EDBT** **2019**
C.Kosyfaki, N. Mamoulis, E. Pitoura, P. Tsaparas

Flow Motifs in Complex Networks **@HDMS** (*poster contribution*) **2018**
C.Kosyfaki

The Privacy Paradox in the Context of Online Health Data Disclosure by Users **@EMCIS** **2017**
C.Kosyfaki, N. Angelova, A. Tsohou, E. Mangos

Student Supervision

PhD Students **HKUST**

- **Sau Lai YIP** - *working on Text-to-SQL problems*
- **Nujibieke Shabuerjiang** *working on spatiotemporal data management topics*

PhD Students **HKU**

- **Carrie Wang** - *working on hypothesis testing on graphs*
- **Xiangju Zhu** - *working on subgraph counting problems*
- **Matin Najafi** - *worked on subgraph counting problems, now a researcher at Huawei, Hong Kong*

Bachelor Students **UoI**

- **Ioanna Papayianni (2020)** - *Thesis: Developing efficient algorithms for analyzing flow patterns in large networks*
- **Dimitris Zervas (2021)** - *Thesis: Detecting the origin of transactions in the Bitcoin Network*
- **Sotiria Kastana (2021)** - *Thesis: Design and development of a synthetic indoor movement generator*
- **Vasileios Georgoulas (2023)** - *Thesis: A web application for passenger movement with public transport*