

# Kyriaki Dimitriadou

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## RESEARCH INTERESTS

Interactive Data Exploration, Database Systems, Query Processing, Machine Learning, Cloud Computing.

## ACADEMIC BACKGROUND

**Brandeis University**, Waltham, MA

June 2017 (Expected)

Ph.D. Computer Science

Thesis: "Learning-based Interactive Data Exploration"

Advisor: prof. Olga Papaemmanouil

**Brandeis University**, Waltham MA

Dec. 2012

M.Sc. Computer Science, GPA 3.91/4.00

Selected Courses Taken: Distributed Systems, Statistical Machine Learning, Networked Information Systems, Principals of Computer System Design, Algorithms

Advisor: prof. Olga Papaemmanouil

**University of Macedonia**, Thessaloniki, Greece

July 2011

B.Sc. Applied Informatics, GPA 8.56/10.00 (top 1% of my class)

Advisor: prof. Alexander Chatzigeorgiou

## WORK EXPERIENCE

*Research Internship:*

**Hewlett Packard (HP Labs)**, Palo Alto CA

May – Aug. 2015

- *Clustering for High Dimensional Streaming Data:* Along with my mentor, Dr. M. Kafai, we designed and implemented a novel algorithm for online clustering of high dimensional streaming data. Our algorithm takes advantage of a property of high dimensional data: hubness. In high dimensional data spaces some objects emerge as hubs; they appear frequently on the nearest neighbor lists of other data points. To perform hubness analysis, our algorithm incrementally builds a k-nearest neighbor (kNN) graph using orthogonal transform based indexing. It then uses information regarding the hubs to formulate data clusters. Based on this work we submitted two US patent applications.

*Research Assistantships:*

**Brandeis University**, Waltham MA

Sep. 2011 – Present

- *Collaborative Data Exploration:* Researching novel techniques to leverage past user queries in order to provide smart recommendations to new users that are exploring a database. In this work, we focus on expanding and using collaborative filtering as well as machine learning techniques (such as clustering) to efficiently provide meaningful exploration recommendations to database users.
- *Automatic Interactive Data Exploration (AIDE):* Designed and prototyped an automatic data exploration system that facilitates interactive data exploration (IDE) tasks. AIDE incorporates machine learning and data management optimization techniques to support IDE applications by steering the user towards interesting "trajectories" through the data and assisting him in formulating queries that retrieve his objects of interest.
- *Crowdsourced Path Exploration (CROWN):* Collaborating in the design and development of a navigation system that uses information gathered from the crowd to provide path recommendations to users. This project combines machine learning, graph theory and active learning to help users explore paths in city streets that similar users have rated highly in the past.

- Interaction History Management Systems (IHMSs): Collaborated in the development of an interaction management system that captures and manages sequences of user interactions with the database. The system is used for storing, accessing and reusing interactions as well as providing recommendations to users.
- Extensible SLAs for Cloud Data Services: Participated in the design and implementation of an SLA (Service Level Agreement) management system for cloud data services. Designed an SLA specification language as well as an extensible SLA monitoring framework that leveraged the properties of the specification language to customize its functionality based on the application and user-specific SLA metrics and parameters.

**University of Macedonia**, Thessaloniki, Greece

Sep. 2010 – Jul. 2011

- Bug Tracking Systems: For my senior bachelor's thesis, advised by prof. Alexander Chatzigeorgiou I extensively studied existing bug tracking systems to identify the desired properties and functionality that could improve the usability of these systems. Issue tracking, project management, collaboration and help desk systems, were also included in the study.

## TEACHING EXPERIENCE

*Teaching Assistantships:*

**Brandeis University**, Waltham MA

Sep. 2011 – present

- COSI 127B - Database Management Systems (*prof. M. Cherniack*) (Fall 2011)
- COSI 130A - Networked Information Systems (*prof. O. Papaemmanouil*) (Fall 2012)
- COSI 146A - Principles of Computer System Design (*prof. L. Shrira*) (Spring 2013)
- COSI 131A - Operating Systems (*prof. L. Shrira*) (Fall 2014)
- COSI 12B - Advanced Programming Techniques (*prof. O. Papaemmanouil*) (Spring 2014, 2015)
- COSI 29A - Discrete Mathematics (*prof. M. Cherniack*) (Fall 2016)

## PUBLICATIONS

*Conference/Journal/Workshop Publications*

- Interactive Data Exploration via Machine Learning Models. O. Papaemmanouil, Y. Diao, K. Dimitriadou, L. Peng. *In Proceedings of IEEE Data Engineering Bulletin*, December 2016.
- AIDE: An Active Learning-based Approach for Interactive Data Exploration. K. Dimitriadou, O. Papaemmanouil, Y. Diao. *Transactions on Knowledge and Data Engineering (TKDE 2016)*. Volume 28, Issue 11, pages 2842 - 2856, November 2016.
- AIDE: An Automatic User Navigation Service for Interactive Data Exploration (Demonstration). Y. Diao, K. Dimitriadou, Z. Li, W. Liu, O. Papaemmanouil, K. Peng, L. Peng. *In Proceedings of 41st International Conference on Very Large Databases (VLDB 2015)*, September 2015.
- Explore-By-Example: An automatic Query Steering Framework for Interactive Data Exploration. K. Dimitriadou, O. Papaemmanouil, Y. Diao. *In Proceedings of the 33th ACM Special Interest Group on Management of Data (SIGMOD 2014)*, June 2014.
- Automatic User Steering for Interactive Data Exploration. K. Dimitriadou, O. Papaemmanouil. *In ICDE PhD Symposium*, April 2014.
- Interactive Data Exploration based on User Relevance Feedback. K. Dimitriadou, O. Papaemmanouil, Y. Diao. *In Proceedings of 9th International Workshop on Self-Managing Databases Systems (SMDB 2014)*, April 2014.
- Query Steering for Interactive Data Exploration. U. Cetintemel, M. Cherniack, J. DeBrabant, Y. Diao, K. Dimitriadou, A. Kalinin, O. Papaemmanouil, S. Zdonik. *In Proceedings of the 6th Biennial Conference in Innovative Data Systems Research (CIDR 2013)*, January 2013.

### *Posters*

- Query Steering for Interactive Data Exploration. K. Dimitriadou, L. Peng, W. Liu, O. Papaemmanouil, Y. Diao. *New England Database Summit, 2015*.
- Auto Query Steering for Interactive Data Exploration Applications. K. Dimitriadou, O. Papaemmanouil, Y. Diao. *New England Database Summit, 2013*.

### *Patents*

- M. Kafai and K. Dimitriadou. Clustering of a Data Stream via an Orthogonal Transform Based Indexing. Filed, 2015.
- M. Kafai, K. Dimitriadou, and A. Mitchell. Update of a Neighbor Graph via an Orthogonal Transform Based Indexing. Filed, 2015.

## **COMPUTER SKILLS**

- Programming Languages: Java, C/C++, HTML/PHP, SQL
- Software Tools: Matlab, R, Hadoop, MapReduce, LaTeX, MS Office, Eclipse

## **HONORS & AWARDS**

- Brandeis University Fellowship 2011-2012, 2012-2013, 2013-2014, 2015-2016
- Gerondelis Foundation Scholarship for Academic Excellence, 2013
- Awarded a “Degree of excellence” from the greek Ministry of National Education and Religious Affairs on the following years: 2001-2002, 2002-2003, 2003-2004, 2005-2006

## **LANGUAGES**

- Greek (native)
- English (full working proficiency)
- Spanish (intermediate)
- French (beginner)