
Shahab Helmi

Ph.D. Student, Research Assistant, Part-time Lecturer

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Education

- **University of Colorado Denver:** Ph.D. in Computer Science, *1/2015-present*
- **University of Southern California (USC):** M.S. in Computer Science, *2012-2014*
- **Azad University of Tehran:** B.Eng. in Software Engineering, *2007-2012*

Publications

- **Spatiotemporal Range Pattern Queries on Large-scale Co-Movement Pattern Datasets.** *Under review, 2017*
- **Efficient Processing of Spatiotemporal Pattern Queries on Historical Frequent Co-Movement Pattern Datasets.** *Proceedings of the 43rd VLDB International Conference on Mobility Analytics for Spatio-temporal and Social Data, 2017*
- **Mining frequent episodes from multivariate spatiotemporal event sequences.** *Proceedings of the 7th ACM SIGSPATIAL International Workshop on GeoStreaming. ACM, 2016.*

Research Interests

- Ordered data management and mining
- Frequent pattern mining from multivariate spatiotemporal series

Work Experience

University of Colorado, Denver: *Graduate Research Assistant 01/2016 - Present*

- **Synthea-OMOP ETL:** this ETL application extracts data from [Synthea](#) [FHIR](#) outputs, transforms it to the [OMOP](#) common data model, and loads it to an OMOP-based database hosted on PostgreSQL server. This application also handles missing data, missing vocabularies, etc.
 - Roles: design, implementation, and testing the application using agile methodology
 - Technologies: Java, JSON, PostgreSQL, IntelliJ

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- **COPD:** as a part of this ongoing project, we are developing a suite of novel tools for efficient data integration, storage, querying, and analysis, all as part of an end-to-end data management and mining system that enables effective data-driven study of COPD. As an example, this tool is going to be used as an underlying layer for applying machine learning techniques on COPDGene data. For more info please visit [BDLab](#) website.
 - Technologies: C#, WPF, Microsoft SQL Server, LINQ, Microsoft Visual Studio
 - **RadOn:** the RadOn project focuses on developing data integration and management solutions to automate verification of radiation oncology treatments. In particular, such solutions are expected to compare the prescription provided by a physician, treatment plans created by dosimetrists, and the details of actual treatment carried out by the treatment instruments, in order to identify inconsistencies in the treatment accurately. For more info please visit [BDLab](#) website.
 - Technologies: C#, WPF, Microsoft SQL Server, LINQ, Eclipse Scripting API

University of Southern California - *Graduate Research Assistant 2012 - 2014*

- **CiSoft:** implemented an application using Microsoft StreamInsight (SI) to receive streaming sensor data from Chevron, detect errors, and reconstruct them.
- **iWatch:** this project was intended for USC Department of Public Safety to detect and announce crimes based on Geospatial data. The final application was implemented using Oracle Spatial Database, Microsoft SQL Server, Java, JDBC, and Microsoft C#.NET

Skills

Desktop Programming

- C#, Java, Python, C++, WPF
- ADO.NET, LINQ
- XML, JSON

Big Data Analytics

- Hadoop MapReduce, MongoDB, Spark

Web Programming

- HTML, CSS, javascript, jquery
- PHP

GIS Tools

- QGIS

Database Engines

- Microsoft SQL Server, Oracle Database, PostgreSQL

Statistical Analysis/Visualization/Machine Learning

- R, Tableau, Microsoft BI, scikit-learn

Teaching Experience

CSCI 3287 - Database System Concepts, UC Denver

Instructor, Spring 2017

CSCI 1410 - Fundamentals of Computing (C++)

Instructor, Summer 2017

CSCI 1411 - Fundamentals of Computing Lab (C++), UC Denver

Instructor, Spring 2017

CSCI 7800 - Introduction to Data Science, UC Denver

Teaching Assistant, Fall 2016

CSCI 1411 - Fundamentals of Computing Lab (C++), UC Denver

Instructor, Summer 2016

CSCI 3287 - Database System Concepts, UC Denver

Teaching Assistant, Spring 2016

CSCI 7702- Introduction to Data Mining, UC Denver

Teaching Assistant, Fall 2015

CSCI 5559 - Database Systems, UC Denver

Teaching Assistant, Spring 2015

CSCI 585 - Database Systems, USC

Teaching Assistant, Spring 2013

Certificates

Microsoft Data Science Certificate

- Data Science Orientation
- Query Relational Databases

Other Certificates:

- [Complete Python Bootcamp](#)
- [R Programming A-Z™](#)
- [Tableau 9 For Data Science](#)

Community Services

- Pervasive and Mobile Computing (PMC) 2016 Paper Review
- Spatial Algorithms and Systems (TSAS) 2016 Paper Review
- ACM GIS 2015 Paper Review