

HASAN BALCI

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Department of Computer Engineering, Bilkent University, Ankara/Turkey, 06800

OBJECTIVE

Get a position in academia, where I can continue research activities on information visualization, graph layout and bioinformatics fields and share my knowledge and experience with students by giving lectures

EDUCATION

Bilkent University

September 2016 - Present

PhD in Computer Engineering, CGPA: 3.77/4.00

Supervisor: Prof. Dr. Ugur Dogrusoz

Thesis Title: fCoSE - A Fast and Constrained Compound Graph Layout Algorithm

Bilkent University

2012-2015

MS in Computer Engineering, CGPA: 3.69/4.00

Supervisor: Prof. Dr. Ugur Gudukbay

Thesis Title: Sun Position Estimation on Time-lapse Videos for Augmented Reality Applications

Bilkent University

2007-2012

BS in Computer Engineering, CGPA: 3.58/4.00

RESEARCH INTERESTS

Information Visualization, Graph Layout, Bioinformatics

- force-directed and spectral layout algorithms
- complexity management of large graphs
- development of user-friendly graph visualization tools
- visualization of biological pathways

RESEARCH EXPERIENCE

Research Assistant

September 2016 - Present

i-Vis Research Lab, Bilkent University

- Designed and developed a layout service named *SyBLaRS (Systems Biology Layout Rendering Service)* which is a web service to lay out graphs in SBGNML, SBML, GraphML and JSON formats and/or produce corresponding images of the layouts in the backend [1]
- Designed and developed *fCoSE (fast Compound Spring Embedder)* [2] and contributed to the design and development of *CoSEP (Compound Spring Embedder with Ports)* [3] layout algorithms
- Participated in *Google Summer of Code 2017* with a project which aims visual quality and performance improvements in CoSE (Compound Spring Embedder) layout algorithm
- Lead development and maintenance of *Newt Pathway Viewer and Editor* which is a web based, open source viewer and editor for pathways in Systems Biological Graphical Notation (SBGN) [4]
- Contributed to the development and maintenance of various Cytoscape.js extensions including *cytoscape-expand-collapse* and *cytoscape-view-utilities* [5]

Research Assistant

2012 - 2015

Mod-Vis Research Group, Bilkent University

- Worked on a project named *An Augmented Reality Environment for Interactive Crowd Simulation* which aims to apply specific scenarios with the virtual crowds in real environments and developed a method for sun position estimation and tracing in time-lapse videos 6

Undergraduate Research

2011 - 2012

Bilkent University

- Worked on senior design project named *Turkish Sign Language Converter via Microsoft Kinect* that converts the signs in Turkish Sign Language to textual form

PUBLICATIONS

- [1] **H. Balci**, U. Dogrusoz and P. Atayev, "SyBLaRS: a web service for laying out and rendering biological maps in SBGN, SBML & more" (in preparation).
- [2] **H. Balci** and U. Dogrusoz, "fCoSE: a fast compound graph layout algorithm with constraint support", *IEEE Transactions on Visualization and Computer Graphics*, 2021.
- [3] A. Okka, U. Dogrusoz, and **H. Balci**, "CoSEP: a compound spring embedder layout algorithm with support for ports", *Information Visualization*, 2021.
- [4] **H. Balci**, M. C. Siper, N. Saleh, I. Safarli, L. Roy, M. Kilicarslan, R. Ozaydin, A. Mazein, C. Auffray, O. Babur, E. Demir, and U. Dogrusoz, "Newt: a comprehensive web-based tool for viewing, constructing, and analyzing biological maps", *Bioinformatics*, 37(10), pp. 1475-1477, 2021.
- [5] U. Dogrusoz, A. Karacelik, I. Safarli, **H. Balci**, L. Dervishi, and M. C. Siper, "Efficient methods and readily customizable libraries for managing complexity of large networks", *PLOS ONE*, 13(5): e0197238, 2018.
- [6] **H. Balci** and U. Gudukbay, "Sun position estimation and tracking for virtual object placement in time-lapse videos", *Signal, Image and Video Processing*, 11(5), pp. 817-824, 2017.

TEACHING EXPERIENCE

Teaching Assistant

2012 - Present

Bilkent University

CS473 - Algorithms I, CS421 - Computer Networks, CS319 - Object-Oriented Software Engineering, CS202 - Fundamental Structures of Computer Science II, CS201 - Fundamental Structures of Computer Science I, CS102 - Algorithms and Programming II, CS101 - Algorithms and Programming I

PROFESSIONAL EXPERIENCE

Summer Intern

June 2011 - July 2011

Aselsan, Turkey

- Developed a database application to be used as an inventory list by using Java and MSSQL

Summer Intern

July 2010 - August 2010

The Central Bank of the Republic of Turkey, Turkey

- Developed a database application for the purchasing department by using PHP and MySQL

SKILLS

Programming Skills	Javascript, Java, C++, HTML, CSS, Matlab, Cypher, SQL
Libraries and Tools	Cytoscape.js, Node.js, Git, jQuery, OpenGL, Unity
Operating Systems	Linux, Windows
Databases	Neo4j, MySQL
Languages	Turkish (Native), English (Advanced)

AWARDS AND HONORS

Full Graduate Scholarship, PhD, Bilkent University	<i>2016 - Present</i>
Graduate Scholarship, The Scientific and Technological Research Council of Turkey	<i>2012 - 2014</i>
Full Graduate Scholarship, MS, Bilkent University	<i>2012 - 2015</i>
Graduation with High Honor Degree, BS, Computer Engineering, Bilkent University	<i>2012</i>
Senior Design Project Innovation Award	<i>2012</i>
Full Undergraduate Scholarship, Bilkent University	<i>2007 - 2012</i>
Achieved 1167th position in University Entrance Exam (among 1.5 million students)	<i>2007</i>