Ali Çivril

Contact

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Research Interests

Scheme-theoretic approach to algorithms and computational complexity.

Design and analysis of algorithms in the classical sense. In particular, approximation algorithms, network design problems, combinatorial optimization.

Education

RENSSELAER POLYTECHNIC INSTITUTE, Troy, New York, USA
Ph.D. - Computer Science — December 2009

RENSSELAER POLYTECHNIC INSTITUTE, Troy, New York, USA
M.S. - Computer Science — December 2007

BILKENT UNIVERSITY, Ankara, Turkey
B.S. - Computer Engineering — June 2004

Appointments

BEYKOZ UNIVERSITY, Istanbul, Turkey
Professor - Computer Engineering — July 2025 – now

ATLAS UNIVERSITY, Istanbul, Turkey
Associate Professor - Computer Engineering — September 2022 – July 2025

ISTINYE UNIVERSITY, Istanbul, Turkey
Associate Professor - Computer Engineering — February 2020 - August 2022

ANTALYA BILIM UNIVERSITY, Antalya, Turkey
Associate Professor - Computer Engineering — August 2015 - July 2016
Assistant Professor - Computer Engineering — September 2014 - August 2015

MELIKŞAH UNIVERSITY, Kayseri, Turkey
Assistant Professor - Computer Engineering — April 2010 - June 2014

AT&T LABS, INC., Florham Park, NJ, USA
Intern — June 2007 - August 2007

RENSSELAER POLYTECHNIC INSTITUTE, Troy, NY, USA
Research Assistant — January 2007 - June 2008
Teaching Assistant — August 2004 - December 2006

Military Service

TURKISH ARMED FORCES
Soldier - 6 months — August 2010 - February 2011

Publications

JOURNAL PUBLICATIONS

1. A. Ç ivril, *Approximation of Steiner Forest via the Bidirected Cut Relaxation*, Journal of Combinatorial Optimization, 38(4): 1196-1212, 2019.
2. A. Ç ivril, *Sparse Approximation is Provably Hard under Coherent Dictionaries*,Journal of Computer and System Sciences, 84(1): 32-43, 2017.
3. A. Ç ivril, *Column Subset Selection Problem is UG-hard*, Journal of Computer and System Sciences, 80(4): 849-859, 2014.
4. A. Ç ivril, *A Note on the Hardness of Sparse Approximation*, Information Processing Letters, 113(14-16): 543-545, 2013.
5. A. Ç ivril and M. Magdon-Ismail, *Exponential Inapproximability of Selecting a Maximum Volume Sub-matrix*, Algorithmica, 65(1): 159-176, 2013.
6. A. Ç ivril and M. Magdon-Ismail, *Column Subset Selection via Sparse Approximation of SVD*, Theoretical Computer Science, 421: 1-14, 2012.
7. A. Ç ivril and M. Magdon-Ismail, *On Selecting a Maximum Volume Sub-matrix of a Matrix and Related Problems*, Theoretical Computer Science, 410(47-49): 4801-4811, 2009.
8. U. Dogrusoz, E. Giral, A. Cetintas, A. Civril, and E. Demir, *A Layout Algorithm For Undirected Compound Graphs*, Information Sciences, 179: 980-994, 2009.

CONFERENCE PROCEEDINGS

1. A. Ç ivril and M. Magdon-Ismail, *Deterministic Sparse Column Based Matrix Reconstruction via Greedy Approximation of SVD,* 19th International Symposium on Algorithms and Computation (ISAAC 2008), Gold Coast, Australia, December 15-17, 2008.
2. Yehuda Koren and A. Ç ivril, *The Binary Stress Model for Graph Drawing,* 16th International Symposium on Graph Drawing (GD 2008), Heraklion, Crete, Greece, Sept 21-24, 2008.
3. A. Ç ivril, M. Magdon-Ismail and E. Bocek-Rivele, *SSDE: Fast Graph Drawing Using Sampled Spectral Distance Embedding,* 14th International Symposium on Graph Drawing (GD 2006), Karlsruhe, Germany, Sept 18-20, 2006.
4. A. Ç ivril and M. Magdon-Ismail, *SDE: Graph Drawing Using Spectral Distance Embedding*, 13th International Symposium on Graph Drawing, 2005.
5. U. Dogrusoz, E. Giral, A. Cetintas, A. Civril, and E. Demir, *A Compound Graph Layout Algorithm for Biological Pathways,* 12th International Symposium on Graph Drawing (GD 2004), NYC, NY, Sept. 29-Oct. 2, 2004.

Research Grants

1. Principal Investigator, TÜBİTAK (Scientific and Technological Research Council of Turkey). *New Approximation Algorithms for Steiner Forest and Related Problems*. Budget: 157,225 TRY ($81,000 at that time), April 2013-February 2016, Project No: 112E192.
2. Principal Investigator, TÜBİTAK (Scientific and Technological Research Council of Turkey). New *Approximation Algorithms for Travelling Salesman and Connectivity Problems in Graphs*. Budget: 1,368,298 TRY, February 2024-February 2027, Project No: 112E192.

Students

Bilge Kağan Dedetürk, M.S., EECS, Melikşah University, June 2014,
"On a greedy heuristic for the Steiner forest problem".

Osman Melih Kürtüncü, M.S., EECS, Melikşah University, June 2014,
"On a greedy heuristic for the multicommodity rent-or-buy problem".

Honors and Awards

2013 Career Development Grant, TÜBİTAK *.

2008 Fellowship, Rensselaer Polytechnic Institute.

2000 Top 0.1% in the university entrance exam. Full scholarship, Bilkent University.

1999 Silver medal, 7th Turkish National Mathematical Olympiad, TÜBİTAK *.

1999 Regional second place, 7th Turkish National Informatics Olympiad, TÜBİTAK *.

1997 Bronze medal, 2nd Turkish Middle School Mathematical Olympiad, TÜBİTAK *.

* TÜBİTAK: Scientific and Technological Research Council of Turkey

Professional Activities

JOURNALS REFEREED

SIAM Journal on Matrix Analysis and Applications

Networks

Journal of Artificial Intelligence Research

Computational Statistics and Data Analysis

CONFERENCES REFEREED

EUROVIS 2008

COCOON 2008

Teaching

ATLAS ÜNIVERSITESI, Istanbul, Turkey

September 2022 – July 2025

- Theory of Computation: Fall 2022.
- Veri Yapıları (Data Structures): Fall 2022, Fall 2023, Fall 2024.
- Data Structures: Fall 2023, Fall 2024.
- Mathematics for Business: Fall 2022.
- Discrete Mathematics: Spring 2023, Spring 2024.
- Applied Statistics: Spring 2024.

ISTINYE UNIVERSITY, Istanbul, Turkey

February 2020 - August 2022

- Advanced Algorithm Design (graduate): Fall 2021.
- Networking and Online Games: Spring 2021
- Basic Programming 2 (C++): Spring 2021, Spring 2022.
- Problem Solving with Computers in C++: Spring 2021, Spring 2022.
- Introduction to Game Programming (C#): Fall 2020, Fall 2021.
- Data Structures and Algorithms: Fall 2020, Fall 2021.
- Basic Programming 2 (C++): Spring 2020.
- Problem Solving with Computers in C++: Spring 2020.
- Algorithms and Basic Data Structures: Spring 2020, Fall 2021.

ANTALYA BILIM UNIVERSITY, Antalya, Turkey

September 2014 - June 2016

- Discrete Mathematics: Fall 2014.
- Approximation Algorithms (graduate): Fall 2014, Fall 2015.
- Data Structures: Spring 2015.
- Computer Organization and Design: Spring 2015, Spring 2016.
- Principles of Programming Languages: Fall 2015.
- Formal Languages and Automata Theory: Spring 2016.

MELIKŞAH UNIVERSITY, Kayseri, Turkey

February 2011 - June 2014

- Nesneye Yönelik Programlama (Object Oriented Programming): Spring 2011.
- Bilgisayar Programlama (Computer Programming): Spring 2011.
- Basic Information Technology: Fall 2011.
- Ayrık Matematik (Discrete Mathematics): Fall 2011, Fall 2012, Fall 2013.
- Lineer Cebir ve Uygulamaları (Linear Algebra and Its Applications): Spring 2012, Spring 2013.
- Algoritma Analizi (Algorithm Analysis): Spring 2013, Spring 2014.
- Hesaplama Teorisi (Theory of Computation): Fall 2013.
- Combinatorial Optimization (graduate): Fall 2011.
- Approximation Algorithms (graduate): Spring 2012.
- Graph Theory (graduate): Fall 2012.
- Advanced Algorithm Design and Analysis (graduate): Spring 2013.
- Computational Complexity (graduate): Spring 2014.

Languages

- Turkish (native)
- English (fluent)
- French (can read mathematical texts)

Other Interests and Skills

- Game Development, Game Design, Game Programming
- Unity (Proficient)
- C# (Proficient, not including .NET)
- C++ (Proficient)