

# Safiye Celik

Computer Science & Engineering  
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## RESEARCH INTERESTS

I am interested in developing novel algorithms aiming to address the problem of high-dimensionality in systems biology applications, with the long-term goal of introducing a promising way for personalized medicine. Those applications include identifying features that represent important molecular events underlying the cancer or Alzheimer's disease; and identifying robust biomarkers that can predict sensitivity of patients to different drugs.

## EDUCATION

**Ph.D. in Computer Science & Engineering** (2012 – 2018 *exp.*)

**University of Washington, Seattle, WA**

(Awarded M.S. degree in 2014, and Ph.D. candidacy in 2016)

Thesis advisor: Su-In Lee

GPA: 3.96 / 4.00

**M.S. in Computer Engineering** (2010 – 2012)

**Bogazici University, Istanbul, Turkey**

Thesis title: *Biclustering Using Nonparametric Bayesian Methods*

Thesis advisor: Ali Taylan Cemgil

GPA: 3.92 / 4.00

**B.Sc. in Computer Engineering** (2002 – 2007)

**Middle East Technical University, Ankara, Turkey** (Got into the program ranking 3rd among over 1.5 million participants in the nationwide University Entrance Exam of Turkey)

Thesis title: *A Unified News Exchange Server with NNTP, Mail, Web and RSS*

GPA: 3.61 / 4.00 (6<sup>th</sup> out of 171 graduates - Dean's High Honor List)

## HONORS AND AWARDS

**AAUW International Doctoral Fellowship** (Acceptance rate 7%) (2013-2014)

One of the 50 international graduate students awarded by the American Association of University Women. The only fellow pursuing Computer Science PhD and one of two Turkish fellows.

**Participant in the Machine Learning Summer School** (Acceptance rate 26%) (2013)

One of the 100 participants selected to attend the 2-week ML summer school in Tübingen, Germany and take classes taught by several distinguished ML researchers including Christopher Bishop and Zoubin Ghahramani.

**UW CSE Funding for TAPIA** (2017)

Awarded by the University of Washington School of Computer Science and Engineering to attend the ACM Richard Tapia Celebration of Diversity in Computing, a premier gathering to promote diversity in computing.

**ECCB Travel Fellowship** (2016)

Awarded by the International Society for Computational Biology and the 15th European Conference on Computational Biology (ECCB 2016) committee to attend ECCB 2016 that welcomes scientists from various disciplines including computational biology, systems biology, bioinformatics, medicine and biology.

**UW CSE Funding for GHC** (2016)

Awarded by the University of Washington School of Computer Science and Engineering to attend the Grace Hopper Celebration of Women in Computing, the world's largest gathering of women technologists.

**CRA-W Travel Grant** (2015)

Awarded to attend the Computing Research Association-Women Grad Cohort Workshop which aims to increase the ranks of senior women in computing by building and mentoring nationwide communities of women through their graduate studies.

**WiML Travel Grant** (Twice: 2013 and 2014)

Awarded to attend the Women in Machine Learning workshop (as a part of the NIPS conference) which gives female researchers in the ML community an opportunity to meet, exchange ideas and learn from each other.

**TUBITAK Graduate Fellowship** (2010-2012)

Awarded by the Scientific and Technological Research Council of Turkey to pursue M.Sc. studies. This fellowship is comparable to the NSF Graduate Fellowship.

**Turkish Educational Foundation Undergraduate Scholarship** (2002-2007)

Awarded by the Turkish Educational Foundation (TEV) to the exceptional students to pursue undergraduate studies.

**3<sup>rd</sup> place among over 1.5 million participants in the University Entrance Exam of Turkey** (2002)

**Turkish Educational Foundation High School Scholarship** (1999-2002)

Awarded by the Turkish Educational Foundation (TEV) to the exceptional high school students.

## PUBLICATIONS

[4] Su-In Lee\*, **Safiye Celik\***, Benjamin A Logsdon, Scott M. Lundberg, Timothy J Martins, Vivian G Oehler, Elihu H Estey, Chris P Miller, Sylvia Chien, Akanksha Saxena, Anthony Blau and Pamela S Becker, “A machine learning technique to learn the biomarker potential identifies novel markers for sensitivity to chemotherapy drugs”, in revision with Nature Communications. (\* means equal contribution)

[3] **Safiye Celik**, Benjamin A Logsdon, Stephanie Battle, Charles W Drescher, Mara Rendi, David Hawkins and Su-In Lee (2016), “Extracting a low-dimensional description of multiple gene expression datasets reveals a potential driver for tumor-associated stroma in ovarian cancer”, Genome Medicine. (*Impact factor 7.07*).

[2] **Safiye Celik**, Benjamin A Logsdon and Su-In Lee (2014), “Efficient Dimensionality Reduction for High-Dimensional Network Estimation”, International Conference on Machine Learning (ICML), Beijing, China. (*Acceptance rate 22%*).

[1] **Safiye Celik**, Benjamin A Logsdon and Su-In Lee (2013), “Sparse Estimation of Module Gaussian Graphical Models with Applications to Cancer Systems Biology”, NIPS Workshop on Machine Learning in Computational Biology (MLCB), Lake Tahoe, USA. (*Acceptance rate 20%*).

## POSTERS AND SPOTLIGHT PRESENTATIONS

- **Safiye Celik**, Shubhabrata Mukherjee, C. Dirk Keene, Paul K. Crane, Su-In Lee, “Bayesian Network Learning for Molecular Marker Discovery in Alzheimer’s Disease and Resilience”
  - Workshop on Computational Biology at ICML, Sydney, Australia, 2017
- **Safiye Celik**, Benjamin A Logsdon, Stephanie Battle, Charles W Drescher, Mara Rendi, David Hawkins and Su-In Lee, “Extracting a low-dimensional description of multiple gene expression datasets reveals a potential driver for tumor-associated stroma in ovarian cancer”
  - Workshop on Computational Biology at ICML, Sydney, Australia, 2017
  - European Conference on Computational Biology, The Hague, Netherlands, 2016
  - CSHL meeting “Systems Biology: Global Regulation of Gene Expression”, Cold Spring Harbor, NY, 2016
- Su-In Lee, **Safiye Celik**, Benjamin A Logsdon, Scott M. Lundberg, Timothy J Martins, Vivian G Oehler, Elihu H Estey, Chris P Miller, Sylvia Chien, Akanksha Saxena, Anthony Blau and Pamela S Becker, “An integrative framework for prioritizing candidate molecular markers reveals a novel driver for sensitivity to topoisomerase inhibitors”
  - CSHL meeting “Systems Biology: Global Regulation of Gene Expression”, Cold Spring Harbor, NY, 2016
- **Safiye Celik** and Su-In Lee, “A Probabilistic Approach to Meta-Analysis of High-Dimensional Biological Network Inference”
  - Computing Research Association-Women Grad Cohort Workshop, San Francisco, CA, 2015
  - University of Washington-Microsoft Research Machine Learning Day, Seattle, WA, 2015
  - NIPS Workshop on Machine Learning in Computational Biology, Montreal, Canada, 2014
  - Women in Machine Learning Workshop at NIPS, Montreal, Canada, 2014
- **Safiye Celik**, Benjamin A Logsdon and Su-In Lee, “Module Graphical Lasso”
  - Machine Learning Summer School, Tubingen, Germany, 2013
  - Women in Machine Learning Workshop at NIPS, Lake Tahoe, NV, 2013

## PROFESSIONAL EXPERIENCE

**Research Assistant (2012 – Present)**

**University of Washington, Computer Science & Engineering, Seattle, WA**

Designing and developing novel machine learning algorithms for structure learning of high-dimensional graphical models, and applying those algorithms to cancer genomics.

**Researcher (2010 – 2012)**

**The Scientific and Technological Research Council of Turkey, Kocaeli, Turkey**

Designed and developed novel and efficient pattern recognition algorithms for mining huge spatio-temporal data.

**Software Engineer (2007 – 2010)**

**MilSOFT Software Technologies Inc., Ankara, Turkey**

- Designed and developed algorithms for automatic analysis and enhancement of the images captured by the Turkish Unmanned Air Vehicle.

- Designed and developed a compiler/parser for the NATO Message Handling System (MHS) for search & rescue ship communications.

## TEACHING EXPERIENCE

**University of Washington, Computer Science & Engineering, WA**

Teaching assistant for undergraduate “Computational Biology” course (CSE427) (*Winter 2015*)

Teaching assistant for graduate “Software Engineering” course (CSE503) (*Winter 2013*)

**Middle East Technical University, Computer Engineering, Ankara, Turkey**

Teaching assistant for undergraduate “Introduction to C Programming for Engineers” (CENG230) (*Fall 2007*)

## VOLUNTEER ACTIVITIES

**Co-organizer**, 1<sup>st</sup> Computational Molecular Biology retreat at the University of Washington (*held on 9/23/14*)

**Undergraduate Mentor**, Computer Science & Engineering, University of Washington

**Graduate Mentor**, Computer Science & Engineering, University of Washington