

# Cagri Ozcaglar

Department of Computer Science  
Rensselaer Polytechnic Institute  
Troy, NY 12180

2416 21st St., Apt:6  
Troy, NY, 12180  
(518) 694-6920  
ozcagc2@cs.rpi.edu

- Education**
- ◇ **Ph.D. in Computer Science,** August 2012 (Expected)  
Rensselaer Polytechnic Institute, Troy, NY.  
*Advisors:* Prof. Bulent Yener, Prof. Kristin Bennett
  - ◇ **M.S. in Computer Science,** 2008  
Rensselaer Polytechnic Institute, Troy, NY.  
*Advisors:* Prof. Sibel Adali, Prof. Boleslaw Szymanski
  - ◇ **B.S. in Computer Science,** 2006  
Bilkent University, Ankara, Turkey.
- Skills**
- ◇ **Languages:** Java, C++, MATLAB, PHP, HTML, Assembly (MIPS, x86), Perl, Shell Scripting.
  - ◇ **Operating Systems:** Windows, Unix/Linux.
  - ◇ **Database Management:** SQL, PostgreSQL, MySQL, Oracle 10g/11g.
  - ◇ **Tools and Applications:** Latex, Eclipse, Visual Studio .NET, CVS.
- Research Interests** Data Mining, Machine Learning, Bioinformatics, Multiway Analysis, Database Management Systems
- Experience**
- ◇ **Research Assistant** 2006 - Present  
Rensselaer Polytechnic Institute, Troy, NY
    - Developed an algorithm to find the mutation history in the DR region of *M. tuberculosis* complex and found topological attributes of the resulting phylogenetic tree. Built two new models, SPM and LBM for one of the attributes, namely, mutation length frequency. Used Java and Matlab.
    - Developed the Tensor Clustering Framework (TCF) to cluster *M. tuberculosis* complex strains into coherent groups using multiple-biomarker tensors. Used Matlab.
    - Drew spoligoforests which displays spoligotype evolution using various distance measures of genomic data of *M. tuberculosis* complex. Drew patient-strain graphs for analysis of patient characteristics based on the genotype of *M. tuberculosis* complex. Used Java, Matlab and Graphviz.
    - Designed and implemented experiments on real and synthetic datasets to test the accuracy of email message distribution into different topics using the Latent Dirichlet Allocation. Used Java, C and MATLAB.
    - Designed and implemented client server architecture of a database for Metamorphic Petrology. Used Java, GWT, PostgreSQL, CSS and Hibernate.
  - ◇ **Software Engineer Intern** Summer 2005  
TUBITAK (Scientific and Technological Research Council), Ankara, Turkey
    - Designed and implemented a program which calculates the salaries of the employees using their entrance and exit time to/from the building using Java.

- ◇ **Software Engineer Intern**  
TRT (Turkish Radio and Television), Ankara, Turkey
Summer 2004
- Developed the user interface of Eurovision Song Contest website of Turkey in .NET environment using C++.
  
- ◇ **Teaching Assistant**  
Rensselaer Polytechnic Institute
- Introduction to Algorithms Fall 2010
  - Computer Science II: Data Structures Spring 2008
  - Computer Organization Spring 2007
  - Artificial Intelligence Fall 2006
  
- ◇ **Undergraduate Teaching Assistant**  
Bilkent University
- Discrete Mathematics Spring 2006
  
- ◇ **Journal Papers**
- ◇ C. Ozcaglar, A. Shabbeer, N. Kurepina, N. Rastogi, B. Yener, K. P. Bennett. **Inferred spoligoforest topology unravels spatially bimodal distribution of mutations in the DR region.** *IEEE Transactions on NanoBioscience*, accepted, in preparation.
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **Epidemiological models of *Mycobacterium tuberculosis* complex infections.** *Mathematical Biosciences*, 2012.
  - ◇ A. Shabbeer, L. Cowan, C. Ozcaglar, N. Rastogi, S. L. Vandenberg, B. Yener, K. P. Bennett. **TB-Lineage: an online tool for classification and analysis of strains of *Mycobacterium tuberculosis* complex.** *Infection, Genetics and Evolution*, 2012.
  - ◇ M. Aminian, A. Shabbeer, K. Hadley, C. Ozcaglar, S. Vandenberg, K. P. Bennett. **Incorporating biology rules of thumb into Bayesian Networks.** *Journal of Bioinformatics and Computational Biology (JBCB)*, in press, 2012.
  - ◇ A. Shabbeer, C. Ozcaglar, B. Yener, K. P. Bennett. **Web tools for molecular epidemiology of tuberculosis.** *Infection, Genetics and Evolution*, 2011.
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **Sublineage structure analysis of *Mycobacterium tuberculosis* complex strains with multiple-biomarker tensors.** *BMC Genomics*, 2011.
  
- ◇ **Conference/Workshop Papers**
- ◇ C. Ozcaglar, A. Shabbeer, N. Kurepina, B. Yener, K. P. Bennett. **Data-driven insights into deletions of *Mycobacterium tuberculosis* complex chromosomal DR region using spoligoforests.** *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Atlanta, November 2011.
  - ◇ K. P. Bennett, C. Ozcaglar, J. Ranganathan, S. Raghavan, J. Katz, D. Croft, B. Yener, A. Shabbeer. **Visualization of tuberculosis patient and *Mycobacterium tuberculosis* complex genotype data via host-pathogen maps.** *IEEE BIBM Workshop on Computational Advances in Molecular Epidemiology*, Atlanta, November 2011.
  - ◇ M. Aminian, A. Shabbeer, K. Hadley, C. Ozcaglar, S. Vandenberg, K. P. Bennett. **Knowledge-based Bayesian network for the classification of *Mycobacterium tuberculosis* complex sublineages** *ACM Conference on Bioinformatics, Computational Biology and Biomedicine (BCB)*, Chicago, August 2011.
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **Examining the sublineage structure of *Mycobacterium tuberculosis* complex strains with multiple-biomarker tensors.** *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Hong Kong, December 2010.

- ◇ A. Shabbeer, C. Ozcaglar, M. Gonzalez, K. P. Bennett. **Optimal Embedding of Heterogeneous Graph Data with Edge Crossing Constraints**. *NIPS Workshop on Challenges of Data Visualization*, Whistler, BC, Canada, December 2010.
- ◇ J. M. Pyle, F. S. Spear, S. Adali, B. K. Szymanski, S. Pearce, A. Waters, Z. Linder, C. Ozcaglar. **MetPetDB: The Unique Aspects of Metamorphic Geochemical Data and Their Influence on Data Model, User Interface and Collaborations**. *Geological Society of America Abstracts with Programs*, Vol. 39, No. 6, 2007.
- Technical Reports**
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **A clustering framework for *Mycobacterium tuberculosis* complex strains using multiple-biomarker tensors**. Rensselaer Polytechnic Institute. TR-10-08, 2010.
  - ◇ F. S. Spear, J. M. Pyle, S. Adali, B. K. Szymanski, A. Waters, Z. Linder, C. Ozcaglar, S. O. Pearce. **MetPetDB: A database for metamorphic geochemistry**. Rensselaer Polytechnic Institute. TR-08-14, 2008.
- Working Papers**
  - ◇ A. Shabbeer, C. Ozcaglar, K. P. Bennett. **Crossing Minimization within graph embeddings**. Submitted to *Journal of Machine Learning Research*.
  - ◇ **Distance matter, but time does not: Spatio-temporal attributes of tuberculosis patients via coupled matrix-tensor factorization**.
- Poster Presentations**
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **A clustering framework for *Mycobacterium tuberculosis* complex strains using multiple-biomarker tensors**. *RPI-NSF Workshop on Multiscale Modeling of Complex Data*, Troy, NY, September 2011.
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **Insights into Camin-Sokal Parsimony and evolution of spoligotypes via spoligoforests**. *New York Academy of Science (NYAS) Symposium on Imaging, Visualization and Simulation: New Tools for Technology and Healthcare*, NYC, June 2011.
  - ◇ C. Ozcaglar, A. Shabbeer, S. Vandenberg, B. Yener, K. P. Bennett. **Multiple-biomarker tensor analysis for tuberculosis lineage identification**. *NIPS Workshop on Tensors, Kernels and Machine Learning*, Whistler, BC, Canada, December 2010.
  - ◇ C. Ozcaglar, B. Yener, A. Shabbeer, M. Aminian, K. P. Bennett. **A clustering framework for *Mycobacterium tuberculosis* complex strains using multiple-biomarker tensors**. *New York Academy of Science (NYAS) 5th Annual Machine Learning Symposium*, NYC, October 2010.
  - ◇ C. Ozcaglar, B. Yener, A. Shabbeer, M. Aminian, K. P. Bennett. **Examining sublineage structure of *Mycobacterium tuberculosis* complex strains with multiway modeling**. *Eigenvector University*, Seattle Washington, May 2010. (Best poster award)
- Theses**
  - ◇ **Classification of email messages into topics using Latent Dirichlet Allocation**, MS thesis, 2008.
- Talks**
  - ◇ **TCF: Tensor clustering framework on multiple-biomarker tensors**. *Bilkent University, Middle Eastern Technical University, Bogazici University*, January 2012.
  - ◇ **Data-driven insights into deletions of *Mycobacterium tuberculosis* complex chromosomal DR region using spoligoforests**. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Atlanta, November 12-15, 2011.
  - ◇ **Examining the sublineage structure of *Mycobacterium tuberculosis* complex strains with multiple-biomarker tensors**. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Hong Kong, December 18-21, 2010.
  - ◇ **Extracting Associations from Activities**. *NSF Cyber-Enabled Discovery and Innovation Symposium*, Troy, NY, September 2007.

- Awards**
- ◇ Student Travel Award to attend IEEE BIBM 2010.
  - ◇ Best poster award, Eigenvector University 2010.
  - ◇ Full scholarship awarded by Bilkent University for undergraduate education, 2002 - 2006.
  - ◇ Top 0.01% in nationwide University Entrance Exam among 1.5 million candidates, 2002.
  - ◇ Ranked 1st in the Mediterranean Region in 8th and 9th Turkish Mathematics Olympiad, 2000, 2001.
  - ◇ Bronze medal in 3rd and 4th Turkish Secondary School Mathematics Olympiad, 1998, 1999.
  - ◇ Full scholarship awarded by Antalya Private M.C.U. Science High School, 1995 - 2002.
- Affiliations**
- ◇ Treasurer of Turkish Student Association at RPI, 2011-2012.
  - ◇ RPI School of Science Graduate Council, Computer Science Representative, 2010-2011.
  - ◇ Member of Graduate Recruiting Committee, Computer Science department, RPI, 2007-2008.
- Activities**
- ◇ **Reviewer for journals:** Computational Intelligence, Network Modeling Analysis in Health Informatics and Bioinformatics.
  - ◇ **Student member:** IEEE.
- Personal**
- ◇ **Date of Birth:** 08/14/1984
  - ◇ **Languages:** Turkish(native), Spanish
  - ◇ **Visa status:** F1