Mehraneh Liaee

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Research Interests

- ◇ Distributed Computing
- ◇ Randomized Algorithms, Probabilistic Methods, Approximation Algorithms
- ◇ Graph Theory, Algorithm Design

Education

- ◇ **Ph.D in Computer Science**, 2014
  College of Computer and Information Science, Northeastern University.
  Advisor: Rajmohan Rajaraman

- ◇ **M.Sc. in Software Engineering**, 2010 - 2012
  Computer Engineering Department, Sharif University of Technology.

  Thesis Title: On Treewidth of Social Networks.
  Advisors: MohammadAli Safari, MohammadAli Abam

- ◇ **B.Sc. in Computer Engineering**, 2006 - 2010
  Computer Engineering Department, Sharif University of Technology.

Research Experiences & Selected Projects

- ◇ " **Information Spreading on Dynamic Networks, Gossip**" 2014
  - We studied problem of n-gossip on dynamic networks, which there are n pieces of information (tokens) sitting on some nodes of the network, and the network is changing by an oblivious adversary round by round. The task is to efficiently spread these tokens so at the end of the day every node has a copy of every token. We obtained a super-linear lower bound for the number of rounds for a class of randomized and distributed algorithms called **Knowledge Based**.
  - We studied the efficiency of a natural distributed algorithm, called **RandDiff** for completing the task of n-gossip, and obtained a super-linear lower bound for that under the model of oblivious adversary.
  - We also obtained a sub-quadratic upper bound for a centralized algorithm to complete the task.
- ◇ "**On treewidth of social networks**"-MS thesis 2012
  - Proposed a practical way to examine lower bound of treewidth in social networks, gained $\Omega(\sqrt{n})$ as the lower bound for treewidth of social networks (Barabasi-Albert model) by using several linear algebraic concepts. Meanwhile, as a secondary result, we experimentally showed that the second smallest eigenvalue of Laplacian matrix is $\Omega(1)$.

Teaching Experiences

- ◇ **Teaching Assistant**,
  - Advanced Algorithms (PhD core course) — Northeastern University — Fall 2015
  - Social Network Analysis (Grad course) — Sharif University of Technology — Fall 2011
  - Discrete Structure — Sharif University of Technology — Fall 2011
  - Design and Analysis of Algorithms — Sharif University of Technology — Spring 2009

Honors and Awards

- ◇ Ranked **2nd** in nationwide Ph.D. entrance exam - major of **Algorithms and Computation**. 2013
- ◇ Granted unconditional offer of admission to M.Sc. program in Computer Engineering (Software)[1]. 2010
- ◇ Recognized as an **exceptional talented** B.Sc. student in Computer Engineering Department[2]. 2010
- ◇ Semi-finalist in **National Mathematics and Informatics Olympiad** 2003 - 2004 - 2005

Work Experiences

- ◇ **Web Developer & Designer**, Summer 2010
  - Internship, Worked as a web developers, designing and implementing an online social network for communication of professors and students.

Skills

- ◇ Programming: C/C++, Java, Python, Prolog
- ◇ Web Development: HTML, CSS, JavaScript, PHP, Symfony Framework
- ◇ Simulation and Analysis Tools: MATLAB, Gephi

References

- ◇ **Rajmohan Rajaraman**, Professor at Northeastern University
  Email: rraj@ccs.neu.edu
- ◇ **Jonathon Ullman**, Assistant Professor at Northeastern University
  Email: jullman@ccs.neu.edu
- ◇ **MohammadAli Safari**, Assistant Professor at Sharif University of Technology
  Email: safari@sharif.edu
- ◇ **MohammadAli Abam**, Assistant Professor at Sharif University of Technology
  Email: abam@sharif.edu
- ◇ **Arash Asadpour**, Assistant Professor at New York University
  Email: aasadpou@stern.nyu.edu

[1] Every year, five top students in each branch of computer engineering, including software, hardware and etc are selected by the department committee of faculty.

[2] Every year, five top students in each branch of computer engineering, including software, hardware and etc are selected by the department committee of faculty.