Morteza Milani

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Research Interests

- Complex Network and Network Data Mining
- Systems Biology
- Structural Analysis of Biomacromolecules

Education

Sept 2012 - March 2015 **MSc in Computer Science**, Shahid Beheshti University (National University of Iran)
GPA: 3.75/4.0
Supervisor: Prof. Changiz Eslahchi

Thesis: Network completion problem survey on PPI networks
Grade: 19.85/20

The primary focus of the thesis is developing an efficient kernel function to compare proteins' tertiary structures. This kernel is then used with an SVM machine to classify pairs of proteins as interacting or non-interacting. Using this machine, learned on yeast PPI network, interactions between human proteins could be inferred with high accuracy. The results outperform many other algorithms in both runtime and accuracy.

Sept 2008 - June 2012 **BACHELOR of Computer Science**, Shahid Beheshti University (National University of Iran)
GPA: 3.31/4.0
Supervisor: Dr. Ali Katanforoush

Project: Automatic web-based homework assessment system
Grade: 19.25/20

In this project, I developed a web-based application that allows instructors to create programming assignments and manage students' submissions as programs in C/C++. The system includes plagiarism detection and automatic evaluation of programs. The plagiarism detection system uses a novel algorithm based on GCC compiler optimization and an implementation of Winnowing algorithm by Saul Schleimer et al.

Research Experience

May 2014 - Present **Research Assistant at Institute for research in fundamental sciences (IPM)**
Supervisors: Prof. Changiz Eslahchi, Dr. Mehdi Mirzaie
Currently, working on protein function and interaction prediction using machine learning approaches. We are expanding our work to suggest, based on tertiary structure, ligands that can prevent a pair of query proteins from interacting. The results can be used in drug discovery and also cancer research.

Honors & Awards

2014   **Elected as a member of Iran's National Elites Foundation**
Awarded by Iran's National Elites Foundation as I was among the top 1% students

2012   **Exceptional Talent Admission for the M.Sc. Program**
Awarded from Computer Science Department of Shahid Beheshti University

2012   **Graduation in Computer Science**
3rd Rank in graduating class of students who enrolled in computer science in 2009

Teaching & Talks

April 2014   **Exploratory Data Analysis**, Lab Demonstrator, Workshop on computational modeling in Cognitive Sciences, Cognitive Sciences Lab, Shahid Beheshti University

Jan 2012 - June 2012   **Database Systems**, Teaching Assistant and Lab Demonstrator, Computer Science Department, Shahid Beheshti University

Publications

Morteza Milani, Mehdi Mirzaie, Changiz Eslahchi (2015), "Protein Function Prediction via Gaussian Graphlet Kernel", Poster accepted at *ISMB/ECCB 2015*

Morteza Milani, Mehdi Mirzaie, Changiz Eslahchi (2014), "Protein Function Prediction via Gaussian Graphlet Kernel", *Under review*
This is mostly chapter 3 of my thesis. Using a newly defined kernel function with an SVM machine, we could classify proteins into functional families efficiently and accurately. This method outperforms other kernel-based and also alignment-based methods for function prediction on benchmark datasets. I gathered data, developed software and wrote the paper draft.

Morteza Milani, Hadi Farahani (2014), "Programming in Prolog", *Persian textbook for teaching Prolog at Shahid Beheshti University, Department of Computer Science*
I authored 4 chapters out of 5.

Work Experience

July 2013 - Present   **Software Development Manager at Pichak Co.**
Leading a team of five people to develop iOS apps resulted in two successful products. Recordium that could reach to the top chart in the Apple appstore and received much attention in the media. CooolKey that downloaded 2M times in the first two days and ranked 1 in the Apple appstore for a week.

Aug 2011 - July 2013   **Senior Web Developer, Dev Ops at Pichak Co.**
Worked as full stack web developer. I also managed linux servers, software repositories, and provided tools requested by other developers.

Technical Skills

Programming: Python, R, Julia, Bash, C++, Ruby, Nodejs, Prolog, Java

Scientific Tools: BLAST, PyMol, iPython, BioPython, Caret Package, LibSVM

Softwares & Systems: Linux, MySQL, PostgreSQL, MongoDB, Redis

Languages

Persian Native

English Fluent

References available upon request