Md. Saiful Islam

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Website, Github

RESEARCH INTERESTS

- Affective Computing
- Natural Language Processing
- Social Network Analysis
- Human-Computer Interaction

EDUCATIONAL BACKGROUND

Ph.D. (Ongoing) in Computer Science February 2021 - Ongoing
University of Rochester

M.Sc. in Computer Science and Engineering April 2017 - August 2020
Bangladesh University of Engineering and Technology
CGPA: 4.00 out of 4.00

B.Sc. in Computer Science and Engineering April 2012 - February 2017
Bangladesh University of Engineering and Technology
CGPA: 3.96 out of 4.00, ranked 3^{rd} in a class of 136 students
Major CGPA: 3.98 out of 4.00

RESEARCH EXPERIENCE

Keyword Aware Influential Community Search in Large Attributed Graphs
We introduce a novel keyword aware influential community query that takes multiple keywords as input and finds communities with relevant expertise ranked by their influences in the network. We propose three search algorithms and evaluate the effectiveness and efficiency of these algorithms using two large real-life attributed graphs. This is the first work of this kind, and our algorithms can retrieve communities with high structural and keyword cohesiveness. [Pre-Print]
Supervisor: Dr. Mohammed Eunus Ali
Collaborators: Dr. Yong-Bin Kang, Dr. Timos Sellis

Augmenting Attributed Knowledge Graph with Semantic Keywords
In an attributed knowledge graph, each author is represented by a node annotated with certain keywords representing the author's field of study. However, the underlying knowledge graphs largely ignore the semantic similarity of keywords and may unintentionally leave out relevant keywords. To address the limitation, we propose a word-embedding based keyword similarity model to augment the nodes of a knowledge graph with a semantically meaningful set of representative keywords. [Abstract]
Supervisor: Dr. Mohammed Eunus Ali
Collaborator: Dr. Yong-Bin Kang

Automatic Detection of NoSQL Injection Using Supervised Learning
We develop a tool for detecting NoSQL injections using supervised learning. Our tool has achieved 0.93 F2-score as established by 10-fold cross-validation. Our tool outperforms Sqreen, the only available NoSQL injection detection tool, by 36.25% in terms of detection rate. [PDF]
Supervisor: Dr. Anindya Iqbal
Collaborator: Dr. Rifat Shahriyar

Continuous Monitoring and Smart Emergency Warning System for Cardiovascular Patients

The objective of this study is developing a mobile-based smart monitoring and emergency response system for cardiovascular patients of Bangladesh. Vital signs like heart rate, blood pressure recorded by smart wearable devices are processed and analyzed by machine learning models. The output is a severity rating of the patient's health status and an advance predictive warning. [Presentation]
Supervisor: Dr. Mohammed Eunus Ali
Collaborators: Dr. Mohammad Mehedy Masud, Dr. Atif Hasan Rahman

PUBLICATIONS

Automatic Detection of NoSQL Injection Using Supervised Learning
Authors: Md Rafid Ul Islam, Md. Saiful Islam, Zakaria Ahmed, Anindya Iqbal, and Rifat Shahriyar
2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC), Wisconsin, USA, July 2019 [PDF]

Keyword Aware Influential Community Search in Large Attributed Graphs
Authors: Md. Saiful Islam, Mohammed Eunus Ali, Yong-Bin Kang, Timos Sellis, Farhana Murtaza Choudhury
Submitted to VLDB 2020. [Pre-Print]

PROFESSIONAL EXPERIENCE

Graduate Research Assistant February 2021 - Current
University of Rochester, New York, United States.

Assistant Professor at Department of CSE November 2020 - January 2021
Bangladesh University of Engineering and Technology, Dhaka, Bangladesh.

Lecturer at Department of CSE May 2017 - November 2020
Bangladesh University of Engineering and Technology, Dhaka, Bangladesh.

Primary Instructor at AI Training November 2018 - March 2019
Successfully conducted the training course covering theoretical and hands-on expertise on traditional machine learning and deep learning with Python, offered by Hiperdyne Corporation, Japan.[Course Outline]

AWARDS AND HONORS

- University Merit Scholarship in each term of undergraduate studies.
- Dean's List Scholarship in each level of undergraduate studies.
- Champion in "Crowdsourcing information for city roads improvement" category in BRACathon 2015.

MAJOR PROJECTS

Result Processing for Online College Admission System of Bangladesh 2018-19, 2019-20
Result processing of about 1.5 million applicants for admission into 7,447 colleges of Bangladesh. This was a government-funded project to automate the entire higher secondary admission system. I designed and implemented the core algorithms for result processing using JAVA and Oracle database.

Requirement Analysis, System Designing, and Supervision of Bangladesh e-Government Enterprise Resource Planning Software 2018-Present
A government-funded project for the office automation of ICT Division and Planning Commission of the Peoples' Republic of Bangladesh. I am currently working as a technical consultant in this project. [Website]

Pairwise Rotation Invariant Co-Occurrence Local Binary Pattern for Image Classification August 2018
Implemented local binary pattern feature and later used image classification algorithms on this feature to classify various indoor and outdoor scenes, and textures. [Presentation]

Spatial Event Organizer February 2018
There are multiple customers and multiple workers in a system. A customer can order something online, then a worker needs to go to the task location from his current location, pick the order, then deliver this to the home address of the customer. Google map API was used to estimate the duration of such travels. The spatial organizer distributes tasks among the employees so that the throughput is nearly optimal and all the employees are fairly loaded. The project was an android application of which, I designed and implemented the back-end algorithms in PHP. [Repository]

Fix My Street 2015-2017
An android application developed for Dhaka City Corporation. The citizens can report road and transportation-related issues to authority using this app. This project was initially developed for BRACathon 2015, a software development contest. After being the champion, this project was funded by BRAC. I designed and implemented the back-end using the PHP Codeigniter framework. [Repository]

Fantasy Cricket August-December 2015
Fantasy cricket is a game where a user forms a virtual team consisting of the players from the real game and receives points based on the performance of those players in the actual game. I designed the database and implemented the back-end using the PHP Codeigniter framework. [Repository]

TECHNOLOGY SKILLS

Programming Languages: Java, Python, C, C++, MATLAB.
Scripting Language and Database: PHP, bash, HTML, MySQL, Oracle.
Tools and Frameworks: Ranklib, Weka, Scikit-learn, Keras, Tensorflow, NLTK.

EXTRA-CURRICULAR ACTIVITIES

- Member of the organizing committee, 6th International Conference on Networking, Systems and Security (NSysS 2019).
- Member of the organizing committee, 5th International Conference on Networking, Systems and Security (NSysS 2018).
- External judge of the ICPC Asia Kolkata-Kanpur Onsite Regional Contest 2018.
- Member of the organizing committee, Bangladesh Olympiad in Informatics (BdOI) 2017, 2018.
- Supervisor of Bangladesh site, Asia-Pacific Informatics Olympiad (APIO 2018).
- Chief Judge, Bangladesh Olympiad in Informatics 2018.

REFERENCE

Dr. Ehsan Hoque
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University of Rochester, New York, United States
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Dr. Mohammed Eunus Ali
Professor, Department of Computer Science and Engineering
Bangladesh University of Engineering and Technology, Bangladesh
Email: eunus@cse.buet.ac.bd