Md. Rezaul Karim

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OBJECTIVE

I am a self-motivated, confident and hard working person with a positive and flexible approach. My career objective is a challenging full time research position (R&D) in a fast-paced and dynamic institute with great enthusiasm; where, there are opportunities to utilize my technical and research skills to work in rendering the knowledge and expertise for constructive works.

RESEARCH INTERESTS

- Data Mining
- Semantic Web & Linked Data
- Bioinformatics
- Distributed Systems
- Data Analytics.

TECHNICAL COMPETENCIES

- Programming Languages: C/C++/Java/R/Python/Julia
- Semantic Web Technologies (Linked Data, RDF-tripl store configuration, SPARQL)
- Basic Statistics and Machine Learning with R and Spark ML
- Oracle Certified Associate (OCA) in Oracle DBA
- Big Data processing with Spark and DeployR
- Big Data environment setup and configuration, Hadoop and cloud services
- Mobile Applications development (Android/Tizen)
- LINUX shell scripting
- Microsoft Visual Studio and SDKs (Android, Tizen, R, Python)
- Web programming (PHP, MySQL, HTML5, CSS3, JavaScript and JQuery Mobile)
- Android Audio Framework with Qualcomm, Marvell, Intel and Broadcom chipsets
- Tizen Native TCT (Tizen Compliance Test) development and execution
- Version controlling system (Git and Perforce).

EDUCATION

National University of Ireland, Galway, Ireland

Doctor of Philosophy (Ph.D.), Expected: Summer 2019

- Major: Biomedical Data Analytics,
- Thesis Title: *Data Workflow Systems in Life Science Research: Towards Cloud Infrastructures with Open Data*
- Advisors: Prof. Dietrich Rebholz-Schuhmann, Ph.D and Ratnesh Sahay, Ph.D

Kyung Hee University, Korea

Master of Science (MSc.), Awarded on Aug 2012

- Major: Data Mining & Knowledge Discovery
- Thesis Title: *Privacy Preserving Mining Maximal Frequent Patterns*
- CGPA 4.038 out of 4.30
- Advisor: Prof. Byeong-Soo Jeong, Ph.D

University of Dhaka, Bangladesh

Bachelor of Science (BSc.), Awarded on June 2008
Major: Computer Science & Engineering

- *First Class Honours*

RESEARCH
EXPERIENCE

PhD Researcher (June 2015 to present)

Institute: Insight Centre for Data Analytics, NUI Galway
Supervisor: Ratnesh Sahay, Ph.D
Working details: As a PhD student and researcher, currently, I am developing an abstraction method for scientific knowledge discovery workflows with linked data and demonstrate its value by implementing with different life sciences big data sources. To be more specific, I am more focused on the large- scale life sciences data analytics. For example, currently I am working on cancer genome datasets (TCGA, COSMIC, ICGC) for cancer prediction (using large- scale machine learning techniques) and validity by mining different linked data sources. Moreover, we are also working on Gene, drug and diseases related analytics by applying semantic web and different big data related technologies. The data analytics includes data collection, data pre-processing, converting into raw data to RDF (linked data) and making them linked open data through public SPARQL endpoints. We also use RDF-triple stores like Apache Jena Fuseki and Virtuoso for linked data uploading and querying. For the pre-processing, I am using R, Julia and Python and for RDFization I use Java and of course large- scale data and the Spark for processing the data on the local cluster (infrastructure at Insight @NUI Galway). For cancer or diseases or drug-drug interaction prediction, we use R and Spark ML and MLlib to handle massive datasets. For graph and data visualisation we use ggplot2 and shiny and deployR for server-side configuration.

Graduate Research Assistant (August 2010 to August 2012)

Institute: DB Lab, Kyung Hee University, Korea
Supervisor: Prof. Byeong-Soo Jeong, Ph.D
Working details: Worked as a Research Assistant in the Database Lab, Dept. of Computer Engineering, Kyung Hee University, Korea. My supervisor was Prof. Byeong-Soo Jeong, PhD throughout my Masters studies majoring Knowledge discovery and data mining. To be more specific, my responsibilities including: Carrying out regular research works for Professors projects. Research and development to deal with transnational datasets, big data, and Large DNA sequence datasets and carrying out regular TA-ship for Professor. My achievements can be summarised as follows: i) Published 20 articles in distinguished and international journals and conferences. Please refer this URL for my citation, ii) Obtained the Master of Engineering degree securing 92.50% marks and CGPA 4.038 out of 4.30. iii) Received the Global talent IT scholarship for the outstanding performance, iv) Received Kyung Hee University president scholarship.

INDUSTRY
EXPERIENCE

Lead Engineer (August 2012 to June 2015)

Institute: Samsung Electronics
Supervisor: Nam-Kyu Lee, Ph.D
Working details: Involved with advanced development project of Android and Tizen mobile OS and advanced researches for new and innovative ideas for Samsung Electronics. To be more specific, I was involved with Android application development for Samsung Mobile commercialization for 3 years. Technically, I was the Team Lead of Android Camera & Music team for 2 years. I have had some golden opportunity to co-work with distributed team members of Global Samsung R& Ds in Korea, India, Vietnam, Poland, Brazil and Turkey. I also worked as the Field Test Engineer in Istanbul, Turkey and User Interface Test Engineer in Korea. In addition, I have successfully played the role as the in charge of Audio Framework, Samsung TTS and S-Voice for the Middle East and Africa region. I have had the sound knowledge on mobile development tools

(i.e. Review Board, QB, P4, Log analysis tools etc.). Besides, I also have very good knowledge on log analysis process and tools of different chip set vendors and partners of Samsung Electronics. Awarded as the ICON of the month (best employee) for December 2014 for the outstanding performance. I did submit 14 ideas in Samsung's Idea Open Space and 3 patent-able ideas as discovery of in- closure in the area of Tizen, Android, Display and Wearable.I worked on 140+ Android model development and OS upgrade projects including ICS, JB, JBP, KK and LL for their software release and development. Besides, I also successfully implemented the RTL mirroring for Voice Recorder app for MEA RTL (Arabic/Urdu /Farshi) languages.

R&D Engineer (Januray 2012 to June 2012)

Institute: BMTech21 Worldwide, Korea
Supervisor: Junk-Sik SIN, Ph.D
Working details: As an R&D Engineer I worked with BMTech21 Worldwide for 6 months. It was a mandatory Industry internship work was related to my Masters studies and the requirement of NIPA, Korean government. The works I did at BMTech21 Worldwide can be summarized as follows: i) Big medical data analysis by Hadoop and MapReduce based framework. ii) PAC system implementation for medical image processing, report generation and storing. iii) Medical Image segmentation, analysis to ease proper diagnosis to doctors and physicians. iv) EEG data classification into alpha, beta, delta, gamma by using Math Lab and C++.

Software Engineer (July 2008 to Aug 2010)

Institute: i2Soft Technology
Web: http://www.i2softbd.com/
Supervisor: SM Abdulahil Kafi
Work details: Developed various ERP based software and website using C/C++, Java, HTML, CSS, JavaScript, PHP, MySQL, etc. In addition, I was involved with regular project delivery to the client sides with time and deadline.

TEACHING
EXPERIENCE

Teaching Assistant (Fall 2015)

CT2106: Object Oriented Programming with Java
Main instructor: Dr. Conor Hayes
Dept: Information Technology, National University of Ireland, Galway
Duration: 4 months (September 2015 to December 2015)

Lecturer[part-time] (Spring 2010)

Cources:
- Database management system,
- Data structure and algorithm,
- Programming with Java

Dept: Computer Science & Engineering, Manarat International University, Dhaka
Duration: 6 months (January 2010 to June 2010)

BOOK (ONGOING)

1. **Md. Rezaul Karim** and Md. Mahedi Kaysar, "Large-Scale Machine Learning with Spark 2.0", *Packt Publishing Corporation(UK)*, To be published in September, 2016.

SUBMITTED
PUBLICATIONS

1. **Md. Rezaul Karim**, Achille Zappa, Ratnesh Sahay and Dietrich-Rebholz Schumann, "Data Workflow Systems in Life Science Research: Towards Cloud Infrastructures with Open Data", *Briefings of Bioinformatics*, Submitted and Under review, May, 2016.

2. Alokkumar Jha, **Md. Rezaul Karim**, Ratnesh Sahay and Dietrich-Rebholz Schumann, "Linked Functional Annotation for Differentially Expressed Gene Demonstrated using Illumina Body Map 2.0", *Journal of Biomedical Semantics*, Submitted and under review, June, 2016.

3. **Md. Rezaul Karim**, Chowdhury Farhan Ahmed, Byeong-Soo Jeong, Ho-Jin Choi, "Mining Maximal Frequent Patterns in Big Transactional Databases and Dynamic Data Streams: A Spark Based Approach", *Information Sciences, Elsevier*, Submitted and under review, February, 2016.

4. **Md. Rezaul Karim**, Chowdhury Farhan Ahmed, Byeong-Soo Jeong, Ho-Jin Choi, "SAMBA: An Efficient and Scalable Market Basket Analysis Technique with Spark", *International Arab Journal of IT*, Submitted and under review, June, 2016.

BOOK CHAPTER

1. **Md. Rezaul Karim**, Md. Mamunur Rashid, Byeong-Soo Jeong, and Ho-Jin Choi, "Privacy preserving Mining Maximal Frequent Patterns in Transactional Databases", *Springer-Lecture Notes in Computer Science (LNCS)* , Vol. 7238, pp. 258271, Heidelberg, Germany, 2012.

2. Md. Mamunur Rashid, **Md. Rezaul Karim**, Byeong-Soo Jeong, and Ho-Jin Choi, "Efficient Mining Regularly Frequent Patterns in Transactional databases", *Springer-Lecture Notes in Computer Science (LNCS)*,Vol. 7238, pp. 258271, Heidelberg, Germany, 2012.

3. **Md. Rezaul Karim**, A.T.M Golam Bari, Byeong-Soo Jeong and Ho-Jin Choi, "Efficient Mining Frequently Correlated, Associated-Correlated and Independent Patterns by Removing Null Transactions", *Springer - Lecture Notes in Electrical Engineering (LNEE)*, Vol.5, No.2, pp.61-74,June,2012, ISSN: 1598-866X.

REFEREED
PUBLICATIONS

1. **Md. Rezaul Karim**, Ratnesh Sahay and Dietrich-Rebholz Schumann, "A Scalable, Secure and Real-time Healthcare Analytics Framework with Spark", *Proc. of the second INSIGHT student conference on Data Analytics*, Accepted and published, INSIGHT, Vol.2, October, 2015.

2. **Md. Rezaul Karim**, Md. Azam Hossain, Md. Mamunur Rashid and Byeong-Soo Jeong, "A MapReduce Framework for Mining Maximal Contiguous Frequent Patterns in Large DNA Sequence Datasets", *IETE Technical Review, Taylor & Francis Online*, Issue: 2, Vol:29, pp.162-168, March-April: 2012, ISSN: 0974-5971.

3. **Md. Rezaul Karim**, Md. Azam Hossain, Md. Mamunur Rashid and Byeong-Soo Jeong, "A Distributed Programming Model for Mining Useful Patterns in Big Datasets", *IETE Technical Review, Taylor & Francis Online*, Vol:1, pp. 142-147, Jan-Feb, 2013, ISSN: 0974-5971.

4. **Md. Rezaul Karim**, A.T.M Golam Bari, Byeong-Soo Jeong and Ho-Jin Choi, "Cloud Technology for Mining Association Rules in Microarray Gene Expression Datasets", *International Journal of Database Theory and Application (IJDTA)*, Vol.5, No.2, pp.61-74,June,2012, ISSN: 1598-866X.

5. **Md. Rezaul Karim**, Md. Mamunur Rashid, Byeong-Soo Jeong and Ho-Jin Choi, "An Efficient Approach to Mining Maximal Contiguous Frequent Patterns from Large DNA Sequence Databases", *Journal of Genomics Informatics*, Vol 10(1), pp. 51-57, March 2012.

6. **Md. Rezaul Karim**, Md. Mamunur Rashid, Byeong-Soo Jeong and Ho-Jin Choi, "Efficient Approach for Mining Interesting Patterns from Biological Sequences", *Journal of Genomics Informatics*, Vol 10(1), pp. 72-19, March 2012.

7. **Md. Rezaul Karim**, A.T.M Golam Bari, Byeong-Soo Jeong, and Ho-Jin Choi, " Market Basket Analysis Using Customers Purchase Rules with Improved MapReduce Framework", *Proc of the 4th International Conference on Emerging Databases (EDB2012)*, Stanford Hotel, Seoul, Aug 23-25, 2012, Korea.

8. **Md. Rezaul Karim**, A.T.M Golam Bari, Byeong-Soo Jeong, and Ho-Jin Choi, " An Efficient Approach for Mining Maximal Contiguous Frequent Patterns from Large DNA Sequence Databases", *In Proc. of the 1st International Conference on Translational Bioinformatics, (TBC, 2011)*, Nov 11, 2011, Seoul, Korea.

9. **Md. Rezaul Karim**, Jae- Hyun Jo, and Byeong-Soo Jeong, "Mining E-shoppers Purchase Behavior Based on Maximal Frequent Patterns: An E-commerce Perspective", *In proc. of the IEEE 3rd International Conference on Information Science and Applications (ICISA, 2012)* , pp. 194-199, May: 23-25, 2012, Kyonggi University, Suwon, Korea.

10. **Md. Rezaul Karim**, Jae- Hyun Jo, and Byeong-Soo Jeong, "An Intelligent and Emotional web Browsing Agent", *In proc. of the IEEE 3rd International Conference on Information Science and Applications (ICISA, 2012)* , pp. 217-222, May: 23-25, Kyonggi University , Suwon, Korea.

AWARDS AND SHCOLARSHIPS
- PhD fellowship by Science Foundation Ireland (SFI) [June 2015 to June 2019]
- Global IT Scholarship by Korean Govt. [August 2010 to August 2012]
- Kyung Hee University Presidents Scholarship [August 2010 to August 2012]
- Natioanl Industry Promotonial Agency (NIPA) Internship award [6 months]
- Junior Talent School Scholarship(JSS), by Bangladesh Govt. [1995 to 1998]
- Secondary School Talent Scholarship(SSS), by Bangladesh Govt. [1998 to 2000]

LANGUAGE PROFICIENCY
- International English Language Testing System (IELTS): Score 6.5
- Testing of English as International Communication (TOEIC): Score 850/990
- Testing of Proficiency in Korean (TOPIK): Level-2

MEMBERSHIP AND CERTIFICATION
- IEEE Student Member (July 2015 – Present)
- Assocaite Member of Bagladesh Computer Soceity (August 2008 – Present)
- Oracle Certified Assocaite in Oracle DBA (July 2008 – Present)

REFERENCES

Prof. Byeong-Soo Jeong, Ph.D.

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