

Mahbubur Rahman

SOFTWARE ENGINEER

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Summary

Motivated software engineer with a Ph.D. degree in computer science offering more than 3+ years of industrial and 5+ years of academic software development experiences in dynamic multicultural environment. Experienced in object-oriented programming with strong problem-solving skills and have a very strong understanding of data structure and algorithms. Able to learn and master new technologies swiftly and can solve unusual, difficult problems in both a team and self-directed setting.

Work Experience

University of Maryland, Baltimore County

Baltimore, Maryland, USA

GRADUATE RESEARCH ASSISTANT

Aug. 2013 - PRESENT

Weed Infestation Identification

- Researched and designed smart-phone based weed identification system by integrating human intelligence with computer vision
- Led the team of three, designing the end-to-end system. Developed Android and iOS applications, designed a database in MySQL, developed middleware with RESTful API, Integrated AWS services
- Designed an optimization algorithm to integrate human responses with computer vision, maximizing accuracy with minimum human response
- Modified the LabelMe toolbox, added new features to integrate with my developed middleware
- Achieved 84% accuracy in identifying smart-phone captured weed images

Sidewalk Obstacle Detection

- Built a system on mobile and embedded platform for visually impaired and wheelchair users to detect accessibility obstacles on a sidewalk
- Implemented an Android application, crowdsourcing web interface, and middleware services to generate the obstacles' prior information
- Designed an algorithm to dynamically determine minimum number of human responses required to correctly annotate the obstacle
- Succeeded to detect accessibility obstacles on the sidewalk in real time using object-specific priors in the embedded camera and Smart-Phone

Bus Stop Localization

- Developed a mobile bus stoppage localization system for visually impaired people using video recorded by embedded camera
- Derived bus stoppage topology from human annotated Google Map using our crowdsourcing annotation tool
- These geo-location priors are being used to locate other components of a stoppage comparing them with sign location of the stoppage
- The system can localize bus stoppage four times faster than manual searching and with step level accuracy

Samsung Electronics America

Bridgewater, New Jersey, USA

SOFTWARE ENGINEER

Jun. 2017 - May. 2018

BixbyForKids

- Created a kids' language corpus using Acapella synthesized voice of real kids reading classic children literature
- Implemented an HMM-DNN based ASR for kids to monitor their language development using a newly created corpus
- Wrote a full bash script for Kaldi ASR tool to train, test and validate the BixbyForKids ASR and achieved 22% WER

Children Development Monitoring

- Conducted a feasibility study on children activity detection from Samsung smart home recorded video, their commercial prospect in industry
- Implemented a prototype for children activity detection by extracting skeleton using CNN and, trained an SVM classifier to classify activities
- Documented and presented a comprehensive study result on state of the art research on activity detection from video using computer vision and deep learning technology

The EMMES Corporation

Rockville, Maryland, USA

SOFTWARE DEVELOPMENT ENGINEER

Jun. 2014 - Aug. 2014

- Designed and developed an Android App to efficiently collect pregnant women's daily medications history. The focus was to use these data in clinical research for identifying Antiphospholipid Syndrome (APS)
- Tested applications prior to final review to ensure that all issues were resolved in the most efficient manner
- Integrated the system to cloud to sync collected data with cloud database, for the researchers to download and analyze

Huwai Technologies (BD) Ltd.

Dhaka, Bangladesh

SYSTEM ENGINEER, NETWORK OPERATION CENTER

Feb. 2011 - Aug. 2011

- Designed and developed a desktop application to generate strategic and performance reports of Aritel Bangladesh mobile network
- Monitored network performance and provided network performance statistical reports for both real-time and historical measurements
- Succeeded to generate reports ten times faster than before with minimal human effort

Pusan National University

Busan, S.Korea

GRADUATE RESEARCH ASSISTANT

Feb. 2009 - Feb. 2011

- Worked closely with other team members to develop robust middleware solutions of EPC information system(EPCIS). The module creates business events, storing them to a database and responds to user query from web-based user interface
- Implemented a pedigree API library in EPCglobal network for preventing forgery of expensive products like alcohol, tuna in the supply chain
- Worked closely with industry peer software engineers to transfer newly developed technologies
- Prepared materials for reports, presentations, and submission to peer-reviewed journal publications and RFID/USN conference
- Lead the process of EPCIS certification in conducting all test cases communicating with EPC global engineers

ABC Corp

Dhaka, Bangladesh

SOFTWARE ENGINEER

Feb. 2008 - Jan. 2009

- Devised ERP software with modules for inventory monitoring, product history management, staff administration and the generation of reports
- Prepared detailed reports concerning project specifications, activities and client feedback
- Performed all testing and troubleshooting methods and documented resolutions in the system
- Wrote maintainable and extensible C#.NET and PL/SQL code in a team environment
- Worked closely with customers to efficiently resolve issues and update reporting module as per dynamic government rules

Education

- Ph.D. candidate, Computer Science, University of Maryland Baltimore County(Expected graduation- Fall 2018)
- M.Sc. in Logistic Information Technology, Pusan National University, S. Korea (2009-2011)
- B.Sc. in Computer Science & Engineering. The University of Dhaka, Bangladesh (2002-2007)

Skills

- **Languages:** Java, Spring MVC, C, C++; Python, Android, PHP, Matlab, C#, JavaScript, XML(WSDL), XSD, REST, SOAP, RMI, Laravel, JQuery
- **Machine Learning:** Working knowledge on Deep Neural Network image and video analysis with Tensorflow and Theano
- **Software tools:** Eclipse, Git, SVN, Matlab, LATEX, OpenCV
- **Database:** MySQL, MongoDB, NoSQL, MSSQL, PL/SQL
- **Working Environment:** Experienced working in Unix/Linux, windows, virtualbox, Docker and, AWS

Publications

SELECTED PUBLICATIONS

- "PreSight: Enabling Real-time Detection of Accessibility Problems on Sidewalks", SECON 2017.
- "Weed Infestation Identification Using Hierarchical Crowdsourcing", Journal of Computers and Electronics in Agriculture, 2015.
- "LastStep: Vision-based Bus Stop Localization and Mapping for Improving Accessibility for Blind Riders", Proc. of the 3rd ACM International Conference on Systems for Energy-Efficient Built Environments.