Ahmad Musa

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Research Interests

Computer Vision and Machine Learning.

Education

Khulna University of Engineering & Technology (KUET), Khulna, Bangladesh

B.Sc. in Computer Science and Engineering   March 2013 – April 2017

CGPA: 3.55 out of 4.00

Undergraduate Thesis

Title: Crowd reckoning towards preventing the repeat of 2015 hajj pilgrims stampede

Summary: The inspiration behind this thesis work is to prevent stampede in overcrowded environment. Given a surveillance image, the objective is to estimate crowd density by detecting human head regions. Detection techniques based on morphological image processing and convolutional neural networks are employed. Experimental results demonstrate the effectiveness of the research work.

Research Experience

- Head Detection
  - To detect human head regions from a gray scale image, the technique is to detect circular regions with low intensity values as generally head regions have black colors.
- Using deep learning to detect head regions
  - A CNN is trained using 1000 head and non-head sample images. The accuracy is higher than circular head detection technique.

Publications

- **A. Musa**, M. M. Rahman, M. S. Sadi, and M. S. Rahman, "Crowd reckoning towards preventing the repeat of 2015 hajj pilgrims stampede," in *2nd International Conference on Electrical Electronic Engineering (ICEEE2017)* [Accepted].

Technical Skills

- **Programming Language**   : C, C++, Java
- **Scripting Language**   : Python, Matlab
- **Research Tools**   : OpenCV
- **Web Based**   : HTML, CSS, ASP.NET

- **DBMS** : Oracle, MySQL

Competitive Programming

Programming Contests Participated..
- ACM ICPC Dhaka Regional 2016
- IUT 8th National ICT Fest 2016
- ACM ICPC Dhaka Regional 2015
- SUB National Programming Contest 2015
- IUT 6th National ICT Fest 2014

Projects

- **A genetic algorithm and machine similarity based approach for part family and machine cell formation**   **Feb. 2017 – Mar. 2017**
    - The goal of this project is to present an approach for obtaining part families and corresponding machine cells by using genetic algorithm and machine similarity coefficents respectively. This project is developed in C++ language.
- **Screen recorder**   **Nov. 2015 – Feb. 2016**
    - An Android app to record screen activity with audio. The app runs in the background to capture game playing, video conversation etc.
- **Rental library**   **Nov. 2014 – Mar. 2015**
    - A website developed in ASP.NET where registered users can browse available books. Users can also view and update the status of their borrowed books.

Honors and Awards

- Winner at University Day Poster Presentation, KUET, 2016
- Dean's List of the Faculty of EEE for Excellent Academic Performance in the Session of 2015-16
- Vocational Scholarship (2013-2016)
- Participation Award in ACM ICPC Asia Dhaka Regional Contest, 2016
- Honorable Mention in ACM ICPC Asia Dhaka Regional Contest, 2015
- Contributor Badge at Hackerearth

Language Proficiency

- Bengali : **Native**
- English : **Fluent** (TOEFL iBT Test Scores: Reading 28, Listening 30, Speaking 26, Writing 28; **Total: 112**; Test taken on 24 sept, 2017)

Aptitude Test Scores

- **GRE** : Quantitative Reasoning: 166 (91 percentile), Verbal Reasoning: 153 (61 percentile), Analytical Writing: 4.5 (82 percentile). Test Taken on 21 aug, 2017.

Mentoring Experience

Mentoring undergraduate students

Khulna University of Engineering & Technology, Khulna **2014 – 2016**
- Conducted workshops in developing problem solving basics including C programming, Dynamic Programming and Geometry.

Related Coursework

- Computer Basics and Programming
- Object Oriented Programming
- Computer Vision and Image Processing
- Computer Networks
- Database Systems
- Artificial Intelligence

- Data Structures and Algorithms
- Numerical Methods
- Information Security and Control
- Computer Graphics
- Computer Architecture and Organization
- Machine Learning

Voluntary Experiences

- **SGIPC (Special Group Interested in Programming Contests)**
  - General Secretary (2016 - 2017)
  - Conducted workshops in developing problem solving basics including C programming, Dynamic Programming and Data Structures.
- **Event Management**
  - National High School Programming Contest (NHSPC), Khulna (2015, 2016).

References

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