

# Hasnain Heickal

+1-413-768-7569 | [hheickal@umass.edu](mailto:hheickal@umass.edu) | [hheickal.github.io](https://github.com/hheickal)

## EDUCATION

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### University of Massachusetts Amherst

*MS/PhD in Computer Science and Engineering. Advisor: Dr. Andrew Lan*

Massachusetts, USA

*Fall, 2021 – Present*

### University of Dhaka

*MS in Computer Science and Engineering*

Dhaka, Bangladesh

*2012 – 2013*

CGPA - 3.85/4.00. Rank - 4th among 13 students.

### University of Dhaka

*B.Sc. (Hons) in Computer Science and Engineering*

Dhaka, Bangladesh

*2007 – 2011*

CGPA - 3.63/4.00. Rank - 4th among 43 students.

## WORK EXPERIENCE

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### Summer Intern

*Educational Testing Service (ETS)*

June 2024 - August 2024

*NJ, USA*

Worked in Automatic Speech and Language Processing (ASLP) team under Product and Innovation Development (PID).

### Assistant Professor (On study leave)

#### Lecturer

*Department of Computer Science and Engineering, University of Dhaka*

February 2018 – Present

May 2014 – February 2018

*Bangladesh*

**Courses Taught:** Advanced Algorithms (MS), Programming Fundamentals, Data Structures, Algorithms, Distributed Systems, Computer Graphics, System Programming, Numerical Analysis, Multi-variable Calculus and Geometry.

#### Lecturer

*Department of Computer Science and Engineering, Eastern University*

January 2014 – May 2014

*Bangladesh*

## RESEARCH

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### Research Interest

Machine Learning for Education, Natural Language Processing

### Google Scholar Profile

<https://scholar.google.com/citations?user=oQc7yEAAAAAJ>

### Current Research

Natural language feedback generation for programming assignments

### Selected Publications

- Generating Feedback-Ladders for Logical Errors in Programming using Large Language Models* **Hasnain Heickal**, Andrew Lan. EDM 2024: 947–951.
- An Automatic Abstractive Text Summarization System* Nasid Habib Barna, **Hasnain Heickal**. DUJASE 6(2) (2022): 39–48
- End-to-End Speech Synthesis for Bangla with Text Normalization*. Tanzir Islam Pial, Shahreen Salim Aunti, Shabbir Ahmed, **Hasnain Heickal**. CSII 2018: 66–71
- Deep Learning Based Bangla Speech-to-Text Conversion*. Md. Tahsin Tausif, Sayontan Chowdhury, Md. Shiplu Hawlader, Md. Hasanuzzaman, **Hasnain Heickal**. CSII 2018: 49–54
- Segmentation of Heterogeneous Documents into Homogeneous Components using Morphological Operations*. Nasid Habib Barna, Tisa Islam Erana, Shabbir Ahmed, **Hasnain Heickal**. ICIS 2018: 513–518
- A framework for developing graphically programmable low-cost robotics kit for classroom education*. Mehedi Hasan Masum, Tanvir Shahriar Rifat, Saifuddin Md Tareeq, **Hasnain Heickal**. ICETC 2018: 22–26
- Computer Vision-Based Real-Time 3D Gesture Recognition Using Depth Image*. **Hasnain Heickal**, Tao Zhang, Md. Hasanuzzaman. International Journal of Image and Graphics 15(1) (2015)

## Thesis Supervisions

1. *Automatic Evaluation of Subjective Answers*. Master's thesis of Tisa Islam Erana. Proposed a weighted bipartite matching-based semantic distance measure to group similar answers.
2. *A Hybrid Filtering-based Book Recommender System Using Users' Social Media Activities*. Master's thesis of Shahreen Selim Aunti. Proposed a Hybrid Filtering-based approach that uses users' social media activities to identify their preferences and topics of interest.
3. *Sentiment Analysis using Convolutional Neural Network with Word Embedding and SentiWordNet*. Master's thesis of Tanzir Islam Pial. Proposed a novel approach for sentiment analysis using a CNN that uses word vectors and sentiment information of individual words together.

## PROGRAMMING CONTEST EXPERIENCE

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### **Coach of Programming Contest**

*Department of Computer Science and Engineering, University of Dhaka* 2010 – Present

*Department of Computer Science and Engineering, Jahangirnagar University* September 2011 – October 2013

Two teams have qualified to ICPC World Finals under my coaching in 2017 and 2020.

### **Problem-setting and Judging**

2013 – Present

*ICPC Asia West Continent Final Contest*

January, 2020

- As Judging Coordinator, coordinated with the judging team to create an original problem set. Team members included judges from Iran, India, Pakistan, Afghanistan, and Bangladesh.

*ICPC Dhaka Regional*

2013, 2017 – 2019

- As Judging Director on 2019, managed the whole judging team consisting 23 persons.
- As Problem-setter and Judge, created few original problems, wrote solutions, tests etc.

*National Collegiate Programming Contest (NCP)*

2014 - 2015, 2017 - 2020

- As Judging Coordinator on 2018 - 2020, coordinated with the judging team to create an original problem set.
- As Problem-setter and Judge, created few original problems, wrote solutions, tests etc.

### **Team Leader, Bangladesh Informatics Olympiad Team**

2014

*International Olympiad of Informatics (IOI)*

Taipei, Taiwan

### **Competitive Programming Achievements**

- 1st position in IUPC by BGC Trust University, Bangladesh in 2012. Team - DU Angry Birds
- 1st position in NCP by University of Dhaka, Bangladesh in 2011. Team - DU Resonance
- 1st position in IUPC by IUT, Bangladesh in 2011. Team - DU Resonance
- 5th position in ICPC Dhaka Regional by NSU, Bangladesh in 2011. Team - DU Resonance
- 4th position in ICPC Dhaka Regional by NSU, Bangladesh in 2010. Team - DU Resonance
- 6th Position in ICPC Amritapuri Regional by Amrita Vishwa Vidyapeetham, India in 2010. Team - DU Resonance
- 2nd position in NCP by SUST, Bangladesh in 2010. Team - DU Resonance
- 4th position in ICPC Amritapuri Regional by Amrita Vishwa Vidyapeetham, India in 2009. Team - DU Dark Shadows

### **Online Problem Solving**

- Solved more than 700 problems in Valladolid Online Judge. Profile: [hhjami](#)
- Maximum rating in Topcoder – 1692 (Yellow). Profile: [Jami.CSEDU](#)
- Maximum rating in Codeforces – 2128 (International Master). Profile: [Jami.CSEDU](#)

## SKILLS

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**Programming Languages:** C/C++, Python, Java, PHP, JavaScript, SQL, QBasic, Assembly, Lisp, Prolog.

**Key Concepts:** Data Structures, Algorithms, NLP, Machine Learning, Databases, Object Oriented Programming

**Tools:** Vim, Git, Google Cloud Platform, VS Code, Eclipse, Netbeans

**Libraries:** OpenGL, Weka, OpenNI, TensorFlow

**Frameworks:** React, Node.js, WordPress, Laravel

**Operating Systems:** Ubuntu, MacOS, Windows, Fedora, CentOS

## EXTRA CURRICULAR ACTIVITIES

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- Champion in Regional Mathematics Olympiad, Chittagong, 2006.
- Second Runner Up in National Mathematics Olympiad, Bangladesh, 2006.
- Runner Up in Inter School Debate Championship, 2002, organized by Drishty, Chittagong.
- Can play several musical instruments such as Violin, Mouth Organ, etc.