

Heba Ibrahim Aly

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Education

Clemson University, SC, USA

- Doctor of Philosophy (PhD) in Computer Science, Jan 2021 – Dec 2024
 - GPA: 4.0/4.0

Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt

- Master of Science in Computer Engineering, Oct 2018
 - GPA: 4.0/4.0
 - Thesis: "A New Hybrid Model for Movement Control of Upper Limb Prostheses in Brain Computer Interface Systems".
- Bachelor of Science in Computer Engineering, June 2016
 - GPA: 4.0/4.0
 - Honors:
 - Scientific Excellence Highest GPA
 - Shield of Excellence from H.E Minister of Defense and Military Production in First International Undergraduate Research Conference of the Military Technical College (IUGRC), Aug 2016

École Des Religieuses Franciscaines (CIM)

- Degree: Egyptian General Certificate of Secondary Education, June 2011
 - Grade: Highest Honors 102.5%
 - Honors:
 - Certificates of Achievement: Exemplary Student, Academic Excellence, Scientific Excellence and Sports Excellence.

Experience

- **Graduate Research Assistant (GRA)**, Computer Science Division, School of Computing, Clemson University, Jan 2022 till Present.
- **Graduate Teaching Assistant (GTA)**, Computer Science Division, School of Computing, Clemson University, Jan 2021 till Dec 2021.
- **Teaching Assistant (TA)**, Computer Engineering Department, Faculty of Engineering and Technology, Arab Academy for Science and Technology and Maritime Transport, Sep 2016 till Dec 2020.
 - Taught classes as proxy for Professor for the following subjects: Artificial Intelligence, Data Structures, Data Acquisition and Operating Systems.
- **Intern at Dell EMC**, Global Professional Service Team, Europe, Middle East and Africa, Aug 6th - Sep14th 2015
 - Service Description:
 - Learned Information Storage and Management (ISM)
 - Honors:
 - Certificate of Achievement: Information Storage Associate Version 2 (EMCISA)
- **Intern at International Business Machines (IBM)**, Global Technology Services, Europe, Middle East and Africa (EMEA), Aug 4th – Sep 10th 2014
 - Service Description:
 - Completed AIX Basics course.
 - Completed AIX System Administration course.
 - Shadowed technical support engineers while providing technical maintenance and support to help enhance the availability of business' IT environments, and help simplify and optimize complex IT frameworks by providing basic problem fixes and proactive, end-to-end direct access support.

Peer-reviewed Papers

- "Digital Privacy Education Interventions for Rural and Urban Older Adults", WIPS 2022.

- “The Effect of Mental Health App Customization on Depressive Symptoms in College Students: Randomized Controlled Trial”, JMIR Ment Health, Aug 2022.
- “Bio-signal based motion control system using deep learning models: a deep learning approach for motion classification using EEG and EMG signal fusion”, Journal of Ambient Intelligence and Humanized Computing, July 2021.
- “Hybrid Brain Computer Interface for Movement Control of Upper Limb Prostheses”, International Conference on Biomedical Engineering and Applications, Funchal, Portugal, July 2018.
 - Awards: Best Student Paper Award (ICBEA18)

Projects

- Reverse stereotyping study (Aug 2021 – Present)
 - The purpose of this study is to examine whether exposure to positive exemplars from underrepresented racial/ethnic groups can mitigate the existing interconnected racial and gender biases. We propose to implement exposure to counter stereotypical exemplars using a motivational speech application.
- Designing digital privacy education interventions for rural and urban older adults (Jan 2022 – Present)
 - The purpose of this study is to identify digital privacy education needs of rural and urban-dwelling older adults and design effective digital privacy education interventions that promote transparency in these populations.
- AirHeart study: “Investigating the Effect of Personalization in a Mental Health App on Depressive Symptoms” (Jan 2022 – May 2022)
 - Mental health apps have shown promise in improving quality of life in a variety of contexts; however, it is unclear how specific internal app features influence the effectiveness of such apps. The purpose of this study is to investigate the effect of app feature personalization, including avatar customization and naming, on depressive symptoms.
- M.Sc. Thesis: “A New Hybrid Model for Movement Control of Upper Limb Prostheses in Brain Computer Interface Systems” (Oct 2017 – Jul 2018)
 - A new hybrid model for movement control of upper limb prostheses is proposed in Hybrid Brain Computer Interface systems. The proposed model integrates EEG and EMG signal processing with machine learning models to efficiently improve classification accuracy and increase the control performance of different upper limb movements for above elbow amputees. In addition, a new deep learning model using Convolution Neural Networks (CNN) is proposed to investigate the efficiency of deep learning in hybrid BCI systems to classify hand and wrist movements.
- A Smart Control of Upper Limb Prosthetic Arms (April 2018 – May 2018)
 - A robotic arm used as upper limb prosthesis to help upper limb amputees to restore their arm functions. The robotic arm was tested on hand, wrist and elbow movements.
- B.SC. Thesis: PHARMAROID: A Mobile Enabled Robot Pharmacist (Oct 2015 – Jul 2016)
 - PHARMAROID is a smart pharmacy enabled with a mobile application that helps to manipulate and manage storage systems like a pharmacy. The user can communicate with server to request the desired medicine, through a mobile application. The server can handle the requests and send them to control system that controls a robot pharmacist. The robot pharmacist is designed to receive and respond to orders, move automatically to capture images, detect and recognize the correct item and pick it from the smart store.
 - Honors:
 - Shield of Excellence from H.E Minister of Defense and Military Production in First International Undergraduate Research Conference of the Military Technical College (IUGRC), Aug 2016
 - Certificate of Achievement: Best Student Poster Paper in the 2016, 33rd National Radio Science Conference (NRSC)
 - Certificate of Achievement: Best B.Sc. Project Performance during annual graduation seminar, from Computer Scientific Society (CSC), Jul 2016
 - Certificate of Participation in First International Undergraduate Research Conference of the Military Technical College (IUGRC), Aug 2016
- Bomb Deactivator (Mar 2015 – Jun 2015)

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- A semi-automated robot that deactivates bombs by cutting a specific wire automatically controlled by Tiva C Series TM4C123G and CC3110L based Air Booster Pack kit. An Android mobile application used to control the robot near to the bomb and give the order to deactivate the bomb after specifying color and shape of the wire to be cut. Image processing used to process images captured by a camera on the robot to detect and extract the region of interest.

Graduate Coursework

- Research Methods for Human-Centered Computing, Deep Learning, Data Mining, Measurement and Evaluation in HCC Systems, Artificial Intelligence and Data Compression and Image Processing.

Field of Interests

- Human Computer Interaction, Privacy, Machine learning, Deep learning, Biomedical Engineering, Brain Computer Interface, Digital signal processing and Internet of Things (IoT).

Skills

- Natural Language: Fluent in spoken and written Arabic, English, and French.
- Programming Language: Visual Basic, C, C++, C#, Python and Java.
- Web Programming: JavaScript, Node.js, HTML and PHP.
- Database designing and development: MYSQL.
- Mobile application designing and development: Android, React Native.
- Image processing and pattern recognition: MATLAB, Python

Extracurricular Activities

- IEEE Eta Kappa Nu (IEEE-HKN)
 - Web Correspondent: April 2018 – April 2019
 - Vice President: April 2019 – Dec 2020
- Microsoft
 - Activity: Student Partner Representative.
 - Date: 2013.
- Association for Computing Machinery (ACM)
 - Honors: Certificate of Achievement.
 - Activity: Egyptian Collegiate Programming Contest (ECPC).
 - Date: Nov 2012.