

Ehsan Ur Rahman Mohammed

rahman6a@uwindsor.ca | mrahm326@uwo.ca | +1 437 230 2265

1103, 1235 Richmond St., London, ON, Canada – N6A 0C1

linkedin.com/in/mohammed-ehsan/ | github.com/EhsanMohd/

Google Scholar Profile: <https://bit.ly/3xU1j9H>

EDUCATION

Ph.D., **Computer Science**, Western University, London, ON, Canada

Sept 2023 - Present

CGPA: **89.20%**

- **Working on brain-inspired robust artificial intelligence under the Supervision of Dr. Yalda Mohsenzadeh and Dr. Apurva Narayan**

Master of Science, **Computer Science Co-op**, University of Windsor, Windsor, ON, Canada

CGPA: **93.09%**

Sept 2021-April 2023

- Thesis: **Face Image Generation with Generative Adversarial Networks using Knowledge Transfer and Self-Attention**
- Awarded **Governor General's Academic Gold Medal**

Bachelor of Technology, **Computer Science and Engineering**, Kakatiya Institute of Technology and Science, India

CGPA: **90.90%**

July 2017-July 2021

- Thesis: **Deep Active Contour based Capsule Network for Medical Image Segmentation**

RESEARCH INTERESTS

Computer Vision, Artificial Intelligence for Healthcare, Natural Language Processing, Image Processing, Statistical Inference and Modelling, Philosophy of Artificial Intelligence, Artificial Intelligence and Ethics

RESEARCH PAPERS AND PRESENTATIONS

Updating Plans

- [Research Updating Plan.docx](#) (Living Document)
- [Designing AI Experiments](#)

Journals

- Reddy Soora, N., **Rahman Mohammed, E.U.**, Waseem Mohammed, S. and Santosh Kumar, N.C., 2022. **Deep Active Contour-Based Capsule Network for Medical Image Segmentation**. IETE Journal of Research, pp.1-11. Link: <https://www.tandfonline.com/doi/abs/10.1080/03772063.2022.2098184?journalCode=tijr20>
- "Quantitative Analysis of Transfer and Incremental Learning for Image Classification" accepted in International Journal of Computational Vision and Robotics (IJCVR).
- Kanaparthi, S.K., Raju, U.S.N., Shanmukhi, P., Aneesha, G.K. and **Rahman, M.E.U.**, 2020. **Image retrieval by integrating global correlation of color and intensity histograms with local texture features**. Multimedia Tools and Applications, 79(47), pp.34875-34911. Link: <https://link.springer.com/article/10.1007/s11042-019-08029-7>
- **Rahman, M.E.U.** and Waseem, M., 2018, November. **A Novel Framework for Detection of Morphed Images Using Deep Learning Techniques**. In International Conference on Computational Vision and Bio Inspired Computing (pp. 181-197). Springer, Cham. Link: https://link.springer.com/chapter/10.1007/978-3-030-41862-5_17
- Soora, N.R., **Mohammed, E.U.R.** and Sharfuddin, W.M., 2020. **A Novel Geometrical Scale and Rotation Independent Feature Extraction Technique for Multi-lingual Character Recognition**. International Journal of Advanced Computer Science and Applications, 11(11).

Link: <https://thesai.org/Publications/ViewPaper?Volume=11&Issue=11&Code=IJACSA&SerialNo=30>

Conferences

- "TransX2GAN: Image Generation using Transfer Learning and Transformer Networks" accepted for presentation at Intelligent Systems Conference (IntelliSys) 2023, Amsterdam, The Netherlands
- **Pirani, R. and Mohammed, E.U.R., 2023, July. Efficient Fake News Detection Method Using Feature Reduction.** In International Conference on Wireless Intelligent and Distributed Environment for Communication (pp. 1-14). Cham: Springer International Publishing.
Link: https://link.springer.com/chapter/10.1007/978-3-031-33242-5_1
- **Mohammed, E.U.R., Parmar, S.P., Pirani, R. and Kapoor, K., 2023, July. Hyperparameter Tuning for an Enhanced Self-Attention-Based Actor-Critical DDPG Framework.** In International Conference on Wireless Intelligent and Distributed Environment for Communication (pp. 121-132). Cham: Springer International Publishing.
Link: https://link.springer.com/chapter/10.1007/978-3-031-33242-5_9
- **Rahman, M.E.U., Ahmad, I.S. and Yelishetty, A., 2022, April. Quantitative Analysis of Transfer Learning for Image Classification.** In 2022 IEEE 7th International conference for Convergence in Technology (I2CT) (pp. 1-7). IEEE.
Link: <https://ieeexplore.ieee.org/document/9825204>
- Indarapu, S.R.K., Soora, N.R., Waseem, M.S. and Ur Rahman, M.E., 2022. **Novel Approach for Character Recognition Using Chi-Square.** In Data Engineering and Intelligent Computing (pp. 413-424). Springer, Singapore.
Link: https://link.springer.com/chapter/10.1007/978-981-19-1559-8_42
- **Rahman, M.E.U., Anishetty, H., Kolipaka, A.K., Yelishetty, A. and Ganta, S.R., 2021, September. A Quantitative Analysis of Basic vs. Deep Learning-based Image Data Augmentation Techniques.** In 2021 International Conference on Innovative Computing, Intelligent Communication and Smart Electrical Systems (ICSES) (pp. 1-9). IEEE.
Link: <https://ieeexplore.ieee.org/document/9633781>
- Mohammed, E.U.R., Reddy, S.N. and Waseem, M.S., 2022. A Comprehensive Literature Review on Convolutional Neural Networks.
Link: https://techrxiv.org/articles/preprint/A_Comprehensive_Literature_Review_on_Convolutional_Neural_Networks/21746237

In-progress:

- **Intriguing Properties of Neural Networks: Revisited,** Ehsan Ur Rahman Mohammed, Rishabh Agarwal and Tanmay Khule
- **Adversarial Robustness of Pre-trained and Randomly Initialized Models on Medical Image Datasets,** Ehsan Ur Rahman Mohammed and Anton Liu

Scholarship of Teaching and Learning in Higher Education:

- **Mohammed, E.U.R. (2023) Teaching as an international teaching assistant,** TAGSA Snapshots of Practice. Available at: <https://www.stlhe.ca/tagsa-snapshot-teaching-as-an-international-teaching-assistant/> (Accessed: 04 January 2024).
Link: <https://www.stlhe.ca/tagsa-snapshot-teaching-as-an-international-teaching-assistant/>
- **"Global Perspectives in Academia: Navigating Challenges and Embracing Opportunities for International Teaching Assistants"** in progress
- **"Towards A More Human-Centric Machine Learning Paradigm: A Theory"** co-authored with Dr. Allyson Skene, submitted to IEEE Technology and Society Magazine
- **Rahman, M.E.U. and Yelishetty, A., 2021, September. Midway Advertisement: A Mechanism to Curb Annoyance due to Unwanted Advertisements.** In 2021 International Conference on Innovative Computing, Intelligent Communication and Smart Electrical Systems (ICSES) (pp. 1-5). IEEE.
Link: <https://ieeexplore.ieee.org/document/9633919>
- **Rahman, M.E.U. and Ram, H.D.S.S., 2019. AI as a Challenging Problem: Solvable without Data but Morally**

Intelligence-driven Insights.

Link: <https://ijsrst.com/IJSRST196429>

Patent Applications:

- **Medical Journalling and Research Dissemination System:** Provisional Patent App. # 63/378,857. USPTO

Reviewer:

- **International Journal of Advanced Computer Science and Applications (IJACSA)** September 2023- Present
- **Computational Intelligence and Neuroscience, Hindawi** January 2023 – Present
- **International Journal of Computing and Digital Systems** September 2022 – Present
- **3rd International Conference on Machine Learning and Intelligent Systems** August 2021 - September 2021

HONOURS, AND AWARDS ---

Governor General's Gold Medal

2022-2023

- Awarded in recognition of my academic excellence demonstrated by securing the highest grades in my program, and research publications

Faculty of Science Student Ambassador Award

- Awarded in recognition of applying and implemented knowledge and experience gained from my degree program within the community (on or off campus); additionally received \$1000 as a cash prize

RBC EPIC Founders Program – Fall 2022 edition

- Won the final pitch competition, securing funding worth \$4000

Co-op/Internship Rising Star Student Award

- In recognition of my exceptional contributions made while on my work placement at eMinds Lab, University of Windsor during Summer 2023

University of Windsor Master's International Entrance Scholarship (thesis/major paper stream)

- Value of the scholarship is **\$7,500**

University of Windsor, School of Computer Science departmental scholarship

- Value of the scholarship is **\$3,000**

Third place, Paper Presentation Category: Computer Science and Engineering Technozion'19, NIT Warangal, Telangana, India

- Topic: **Image Generation using Deep Convolutional Generative Adversarial Networks**

First place, Paper Presentation, Category: Computer Science and Engineering Technozion'18, NIT Warangal, Telangana, India

- Topic: **Convolutions for Visual Recognition**

First place, Paper Presentation, Category: Computer Science and Engineering Technozion'17, NIT Warangal, Telangana, India

- Topic: **Support Vector Machines-working of SVMs, its advantages, scope of improvement and applications**

Champions of Hyderabad; Runner up at the semi-finals at the national level economic quest "Financial Quest Season-3".

- Runner-up in semi-finals of a celebrated quiz on finance, banking, and economics

RELEVANT COURSEWORK

Undergraduate-level courses

Programming in C, C++ and Java, Data Structures and Algorithms, Linear Algebra, Discrete Mathematics, Operations Research, Operating Systems, Object Oriented Programming, Computer Architecture and Organization, Theory of Computation, Database Management Systems, Software Engineering, Computer Networks, Design and Analysis of Algorithms, Web Programming, Compiler Design, Data Mining and Data Warehouses, Big Data, Machine Learning, Cryptography and Network Security, Cloud Computing, Digital Image Processing, Computer Graphics, Human-Computer Interaction and Thesis

Graduate-level courses

Literature Review and Survey, Topics: Artificial Intelligence, Neural Networks and Deep Learning, Natural Language Processing and Understanding, Topics in Bioinformatics and Thesis

PROFESSIONAL WORK EXPERIENCE

Research Intern, NITW, Warangal, India

June 2018-July 2018

- Engineered a **Content Based Image Retrieval system** using image processing techniques and the computer vision toolbox of MATLAB in one month and improved it with **Hadoop** distributed computing framework and **Spark**
- Implemented traditional algorithms applied in image classification and retrieval using **Python and MATLAB**
- Consolidated an improvement of over **2%** in accuracy compared to that of other extant models, reduced inference time by a factor of up to **1.5** and proposed advances and improved methods of image retrieval system's evaluation

Machine Learning Intern, Wingfotech Pvt. Ltd., Hyderabad, India

May 2019-July 2019

- Implemented various machine-learning algorithms from regression analysis to neural networks in different company projects with Python and its libraries: **scikit-learn, TensorFlow, Keras, Pandas, Numpy, matplotlib**, among others
- Organized performance results using **MS Power BI and Plotly**, made presentations using MS PowerPoint for a better understanding of the impact of different parameters of the model, amount, and variety of financial data on performance of ML models

Software Developer Co-op Student, e-Minds Lab, University of Windsor, Canada

May 2022-August 2022

- Developed Graphical User Interfaces using Python for lab members to take measurements from sensors
- Designed and built a web application and a mobile application for the research project led by Ontario Greenhouse Vegetable Growers (OGVG)
- Performed data analysis using Python and its libraries on data collected from various sensors in the lab for drawing research insights
- Assisted in the multi-disciplinary research works at the lab
- Reported, documented and presented my work to the lab members and other stakeholders, along with holding tutorials on machine learning and programming

TEACHING EXPERIENCE

Teaching Dossier

- [Teaching Dossier](#) (Living Document)

Assistantships

Graduate Assistant, School of Computer Science, University of Windsor, Canada

January 2022-April 2022

- Conducted labs, held office hours, and graded assignments for Advanced Systems Programming (COMP-8567) course

Graduate Assistant, School of Computer Science, University of Windsor, Canada September 2022-Present

- Conduct labs, hold office hours, and grade assignments for Advanced Software Engineering (COMP-8117) course

SoTL Advancing Graduate Education in STEM (SAGES), University of Windsor, Canada September 2022- April 2023

- Took the two courses on teaching in STEM to develop evidence-based teaching practices.
- Paired with a Dr. Shafaq Khan as faculty mentor to redesign and teach a unit of COMP-1047 (Computer Concepts for End-Users)

LEADERSHIP AND SERVICE EXPERIENCE

Sustainability Coordinator, SoGS, Western University, Canada

November 2023 – Present

- Represent SoGS at meetings of external organizations such as committees and student clubs working on sustainability topics. Examples may include attending meetings with EnviroWestern (USC), Western Sustainability, Western President's Advisory Committee on Environment and Sustainability (PACES), or City of London Advisory Committees
- Coordinate sustainability-themed initiatives and events with the Sustainability Committee, acting independently or in collaboration with external groups that are open for participation by SOGS members
- Compile and maintain an online database of environment and sustainability resources to be made accessible to SOGS members on the SOGS website
- Support education of SOGS members about environment and sustainability issues, particularly as they apply to opportunities for action at Western University and in the surrounding community
- Address and, where appropriate, advocate for graduate students' concerns about environment and sustainability within and beyond Western's campus
- Report on their current projects and progress to the Vice-PresidentAdvocacy prior to the Council package report submission deadline

Student MAL, Teaching Assistant and Graduate Student Advancement (TAGSA), Canada

Sept. 2023 – Present

- Representing student members of TAGSA, special interest group of STLHE (Society for Teaching and Learning in Higher Education)
- Working member of two of TAGSA's sub-committees: TAGSA Events and STLHE Session and Student Awards

Conference Chair, UWill Discover Conference 2023, University of Windsor, Canada

October 2022 – April 2023

- Lead the steering committee by developing and sharing a plan for organizing the conference
- Hired and managed volunteers and organized weekly meetings and created agenda for each meeting
- Coordinated project management: assign tasks and ensure task completion from volunteers, book facilities, manage communications, coordinate records management and manage disruptions
- Assisted development and completion of pre-conference workshops
- Prepared a post-conference report

Head of Events, UWindsor AI Club, University of Windsor, Canada

Sept. 2022 - Present

- Lead the development, planning and delivery of creative and engaging events supporting the club's goals
- Connect with potential speakers in the field of Artificial Intelligence for conducting colloquiums

MSc Student Representative, School of Computer Science, University of Windsor, Canada

Sept. 2022 - Present

- Act as a liaison between the students and School of Computer Science's council
- Attend monthly council meetings and sitting on various committees as needed including Appointments Committee, Promotion & Tenure Committee, and Curriculum Committee

Volunteer Internship Program-Community Service Learning, University of Windsor, Canada Sept. 2022 - Present

- Program Assistant for SEAT Program by WEST Inc. of Windsor
- Virtually assist youth with their project ideas by helping them create a project timeline, research for their project and proposal writing, create project budgets
- Tutor the program participants on certain subject matter based on their project ideas
- Provide mentorship for students concerning their projects
- Assist with the recruitment of new volunteers and in connecting with community partners and organizations

Graduate Student Representative, Hiring Committee, CTL, University of Windsor, Canada Sept. 2022-Present

- Contribute to the creation of criteria for application selection, and interview
- Help in recommending most suitable applicant for the positions of "Permanence-Track Teaching and Learning Specialist Ancillary Academic Staff (I or II) in the Field of Indigenization" and "Twelve (12) month Limited Term Position - Learning Specialist - Ancillary Academic Staff in Educational Development" at the Centre for Teaching and Learning to the university

Resource Creation Volunteer, STEMxPolicy, University of Windsor, Canada June 2022-October 2022

- Research policy protocols at university, municipal, provincial, and federal government levels
- Putt together informative packages that summarize relevant key points from my research to audience
- Stay up to date with new policy developments and trends to ensure relevant information is presented to students

Submissions Coordinator, UWill Discover 2022 Conference, University of Windsor, Canada Jan. 2022-May 2022

- Developed call for submissions and recruiting evaluators (graduate students, faculty, etc.) to review more than 100 submissions and created a conference schedule based on submissions received and updated the UWill Discover conference website
- Worked closely with the Communications coordinator to ensure that call for submissions is sent out to a broad student audience

Head and Founder of Computer Science Research Group, KITSW, Telangana, India July 2020 – May 2021

- Spearheaded the creation of the group by meeting officials higher in the management
- Helped around 15 students ideate & formulate research problems into research projects and publish research work in journals
- Conducted seminars and workshops for students to draw their interest towards research

Chief Secretary, Computer Science and Engineering Association, KITSW, Telangana, India 2020-2021

- Led teams of 20 executive members in communicating about the department's student association and its activities via social media and posters and holding meetings with the team to plan new association activities
- Planned, and recruited speakers for various workshops, events, and co-curricular activities for more than 200 students

Co-chair, The UN Environment Assembly, KITSWMUN'2020, KITS, Warangal, India March 2020

- Recorded votes, advised delegates on possible course of discussion, and enforced observance of MUN rules
- Proposed procedural motions which are best for the current debate of more than 50 delegates

VOLUNTEERING EXPERIENCE

Head of House, Canterbury College Residence, Windsor, Ontario January 2022 – April 2023

- Acted as willing advisor and resource person the residents of Laud House can approach for social or personal concerns
- Helped enforce the college's rules and standards for a more comfortable stay for the residents
- Organized regular meetings and social events for the residents

Director, Program and Operations, Sardar V Do Organization

June 2017- December 2022

- Lead organization's student community comprising of more than 200 volunteers
- Headed conduction of various Open Talks, guest lectures, and development events and promoting those among various student bodies across state in collaboration with four other student organizations, and two government bodies
- Pitched and chartered 11 student development programs designed at organization among various educational institutions

Volunteer and Teaching Assistant, Bhumi Org., Hyderabad.

2016-2017

- Taught computer skills such as coding and MS Office, and organized educational field trips for students with financial problems

TECHNICAL TRAINING

- **Machine Learning nanodegree**, Udacity July 2021 - August 2021
- **Deep Learning nanodegree**, Udacity August 2021 - September 2021
- **Data Scientist nanodegree**, Udacity October 2021 - December 2021
- **Machine Learning A-Z: Hands-On Python & R in Data Science**, Udemy January 2019
- **4th Summer School on Computer Vision**, by CVIT, IIIT-Hyderabad July 2019
- **5th Summer School on AI and Machine Learning**, by CVIT, IIIT-Hyderabad August 2021
- **6th Summer School on AI**, by CVIT, IIIT-Hyderabad July 2022 - August 2022
- **7th Summer School on Computer Vision and Machine Learning**, by CVIT, IIIT-Hyderabad July 2023
- **Data Scientist with Python** career track, and **Python Programmer** career track, Data Camp 2018

ADDITIONAL TRAINING

- RBC EPIC Founders Program**, EPICentre, University of Windsor October 2022-January 2023
 - Program aims to support aspiring entrepreneurs looking to build a viable business model
- University Teaching Certificate**, Centre for Teaching and Learning, University of Windsor June 2022-Present
 - Program aims for academics to develop their teaching practice and enhance student learning
- NextGen CTO Program**, EPICentre, University of Windsor March 2022
 - Program aims to develop Chief Technology Officers, especially in innovation-driven companies
- SMArt Masterclass**, Faculty of Science, University of Windsor February 2022
 - Program aims at building critical communication skills in science, technology, engineering and mathematics
- Scientist2Entrepreneur**, Science Discovery Zone, Toronto Metropolitan University February 2022-May 2022
 - Program explores entrepreneurship to transform one's academic research into world-changing tech company
- VentureStart**, EPICentre, University of Windsor March 2022-April 2023
 - Program aims to support highly motivated individuals who are dedicated to launching and growing great ideas

PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS

- ACM and ACM-SIGAI Student Member
- IEEE Student Member
- Golden Key International Honour Society Lifetime Member
- Toastmasters Club
- STLHE Student Member and SIGs: Teaching Assistant and Graduate Student Association (TAGSA) Scholarship of Teaching and Learning (SoTL)

SKILLS

1. **Programming:** Python, R, C++, C, SQL, MATLAB, Java, HTML, CSS, JavaScript, PHP, Dart, Embedded C
2. **Tools:** Pytorch, TensorFlow, Git, LaTeX, Visual Studio Code, Microsoft Word, Microsoft Excel, Microsoft PowerPoint
3. **Languages:** Fluent in Hindi, Urdu, English | Limited working proficiency in Telugu, Arabic
4. **Interests:** Reading, travelling, and volunteering