


# Mohammad Samin Yasar





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EDUCATION	<b>University of Virginia</b> , Charlottesville, Virginia	Aug 2017 – Present
	Ph.D. in Computer Engineering Dissertation: <a href="#">Enabling Human-Robot Collaboration through Representation Learning</a>	
	<b>University of Virginia</b> , Charlottesville, Virginia	Aug 2022
	M.Eng. in Computer Engineering	
	<b>BRAC University</b> , Dhaka, Bangladesh	Apr 2015
	B.Sc. in Electrical and Electronic Engineering	
RESEARCH AND WORK EXPERIENCE	<b>Collaborative Robotics Lab</b> , University of Virginia	Jan 2020 – Present
	<b>Project:</b> Enabling Human-Robot Collaboration through Representation Learning.	
	Led multiple projects between academia and industry on robot perception and robot control.	
	Proposed novel sequence learning algorithms that advanced the state-of-the-art in human motion prediction, work done in collaboration with <a href="#">CCAM</a> .	
	Proposed a policy learning framework that interleaves planning with execution for robots, with performance improvement over state-of-the-art, work done in collaboration with <a href="#">NEC Labs</a> .	
	<b>Dependable Systems and Analytics Lab</b> , University of Virginia	Aug 2017 – Dec 2019
	<b>Project:</b> Detecting Adverse Events in Robotic Surgery in Real Time	
	Led cross-disciplinary research with surgeons and residents from <a href="#">UVA School of Medicine</a> .	
	Proposed a safety monitoring system that detects unsafe events in robotic surgery.	
	Simulated realistic surgical robot failure modes using software fault injections.	
AWARDS & RECOGNITION	<b>Graduate Teaching Assistant</b> , University of Virginia	Jan 2021 – May 2021
	<b>Course:</b> Human-Robot Interaction	
	Co-instructed the hands-on laboratory classes of the course.	
	Developed assignments and lesson plans for the lab classes.	
	Conducted tutorial sessions and graded assignments.	
	<b>UVA Graduate Endowed Fellowship</b>	Sep 2023
	Recognized for academic performance and research productivity.	
	<b>UVA Career Center Distinguished Mentor</b>	Aug 2023
	Recognized for supporting and mentoring UVA students in their career development.	
	<b>UVA Professional Development Award</b>	Apr 2023
SKILLS	Awarded on the basis of Ph.D. impact, leadership and commitment to the UVA community.	
	<b>UVA Engineering Research Symposium (UVERS)</b>	Mar 2022, Mar 2023
	Selected to present my Ph.D. work in the highly selective research symposium.	
	<b>Human Robot Interaction Pioneers</b>	Apr 2022
	Selected as one of the HRI Pioneers 2022 for ongoing work in developing algorithms for robots to fluently collaborate with humans.	
	<b>Double Hoo Research Grant Award</b>	Mar 2022
	Awarded for proposed research on enabling close-proximity human-robot collaboration.	
	<b>Second place, ECE Research Poster competition</b> , University of Virginia	Sep 2018
	Awarded for research merit and presentation.	
SELECTED PUBLICATIONS	<b>Machine Learning/Deep Learning</b>	<b>Computer Skills</b>
	▪ TensorFlow	▪ Programming Languages: Python, Java, C, C++
	▪ PyTorch	▪ Code Instrumentation: LLVM, Pin
	▪ Scikit learn	▪ Others: UNIX/Linux, BASH, $\text{\LaTeX}$
	<b>Robotics</b>	<b>Computer Vision/Image Processing</b>
	▪ ROS	▪ OpenCV
	▪ Gazebo	▪ Matlab
	<b>JOURNALS</b>	
	▪ <b>M. S. Yasar</b> , M. M. Islam, and T. Iqbal, “Imprint: Interactional dynamics-aware motion prediction in teams using multimodal context,” ACM Transactions on Human-Robot Interaction ( <a href="#">Impact Factor: 5.36</a> ). Under review for Minor Revision, 2023.	
	▪ M. M. Islam, <b>M. S. Yasar</b> and T. Iqbal, “MAVEN: A Memory Augmented Recurrent Approach for Multimodal Fusion,” IEEE Transactions on Multimedia ( <a href="#">Impact Factor: 8.13</a> ), 2022. <a href="#">A</a>	
	▪ <b>M. S. Yasar</b> and T. Iqbal, “A Scalable Approach to Predict Multi-Agent Motion for Human-Robot Collaboration,” IEEE Robotics and Automation Letters ( <a href="#">Impact Factor: 4.32</a> ), Presented at ICRA, 2021. <a href="#">A</a>	

- S. M. Preum, S. Munir, M. Ma, **M. S. Yasar**, D. J. Stone, R. Williams, H. Alemzadeh, J. A. Stankovic, “A Review of Cognitive Assistants for Healthcare: Trends, Prospects, and Future Directions,” ACM Computing Surveys ([Impact Factor: 14.32](#)), 2021. 

#### CONFERENCES

- **M. S. Yasar**, and T. Iqbal, “VADER: Vector-Quantized Generative Adversarial Network for Motion Prediction,” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023.
- **M. S. Yasar**, and T. Iqbal, “CoRaL: Continual representation learning for overcoming catastrophic forgetting,” International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2023. 
- **M. S. Yasar**, and H. Alemzadeh, “Real-Time Context-aware Detection of Unsafe Events in Robot-Assisted Surgery,” 50th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), 2020. 
- K. Hutchinson, **M. S. Yasar**, H. Bhatia and H. Alemzadeh, “A Reactive Autonomous Camera System for the RAVEN II Surgical Robot,” International Symposium on Medical Robotics (ISMR), 2020. 
- **M. S. Yasar**, D. Evans and H. Alemzadeh, “Context-aware Monitoring in Robotic Surgery,” International Symposium on Medical Robotics (ISMR), 2019. 

<b>SELECTED TALKS</b>	<b>AAMAS - CoRaL: Continual Representation Learning for Overcoming Catastrophic Forgetting</b>	Jun 2023
	<b>DC-AAMAS - Learning Transferable Representations for Non-Stationary Environments</b>	Jun 2023
	<b>UVERS - Learning Transferable Representations for Non-Stationary Environments</b>	Mar 2023
	<b>HRI Pioneers Workshop - Robots That Can Anticipate and Learn in Human-Robot Teams</b>	Mar 2022
	<b>ICRA - A Scalable Approach to Predict Multi-Agent Motion for Human-Robot Collaboration</b>	Jun 2021
	<b>LEAP-HRI - Improving Human Motion Prediction Through Continual Learning</b>	Mar 2021
	<b>ISMR - Context-aware monitoring in Robotic Surgery</b>	Apr 2019

<b>PROFESSIONAL SERVICE</b>	<b>Organizer:</b> RSS Workshop on Close-Proximity Human-Robot Collaboration	2022
	<b>Session Co-Chair:</b> IEEE ICRA: Human-Robot Interaction Motion Planning	2021
	<b>Reviewer:</b> ACM/IEEE International Conference on Human-Robot Interaction (HRI)	2021
	<b>Reviewer:</b> ACM/IEEE International Conference on Human-Robot Interaction (HRI)	2021
	<b>Reviewer:</b> IEEE Robotics and Automation Letters (RA-L)	2021, 2022
	<b>Reviewer:</b> IEEE International Conference on Robotics and Automation (ICRA)	2020

<b>ACADEMIC PROJECTS</b>	<b>Subject detection and tracking in a video (<a href="#">Code</a>)</b>	
	Extracted Histogram of Oriented Gradients (HOG) features from the initial video frame’s designated template.	
	Trained a linear SVM classifier for subject discrimination.	
	Distinguished subject from background using distinctive HOG features.	
	Employed sliding window technique for spatial analysis in video frames.	
	<b>Development of a surgical robot simulator (<a href="#">Code</a>)</b>	
	Developed a surgical robot simulator integrating the gazebo physics engine.	
	Achieved accurate replication of RAVEN II surgical procedures within a controlled virtual environment.	
	Introduced a virtual camera perspective, enabling recording of experiments from the surgeon’s point of view.	
	<b>Data-driven interface for detecting fraudulent transactions (<a href="#">Code</a>)</b>	
	Design a pipeline for data preprocessing and feature selection tailored for an unbalanced dataset.	
	Trained and validated different classifiers (kNN, SVM, XGBoost, Random Forest) using double cross validation.	
	<b>Product Price Prediction from Images (<a href="#">Code</a>)</b>	
	Implemented a web crawler to create a dataset comprising of product images and product meta data.	
	Designed a product price predictor consisting of a pre-trained model extracting visual features.	
	Developed a fully-connected regressor for accurate product price prediction.	

<b>MENTORING EXPERIENCE</b>	<b>TJ Vitchutripop (CS Undergrad)</b>	
	Robotics Institute Summer Scholar (RISS), Carnegie Mellon University 2023.	
	Louis T. Rader Outstanding Undergraduate Research Award 2023.	
	Double Hoo Research Grant Award 2022.	
	<b>Wesley Lewis (CS Undergrad)</b>	
	Robotics Institute Summer Scholar (RISS), Carnegie Mellon University 2023.	
	Dean’s Summer Research Fellow 2022.	
	<b>Brandon Yang (CS Undergrad)</b>	
	Dean’s Summer Research Fellow 2023.	

<b>TRAVEL GRANTS</b>	<b>AAMAS Travel Grant</b>	2023
	<b>HRI Travel Grant</b>	2022
	<b>DSN Travel Grant</b>	2019
	<b>ISMR &amp; SSMR Travel Grant</b>	2019