

S M Kamrul Hasan

EDUCATION	Ph.D. in Imaging Science Rochester Institute of Technology • Thesis Advisor: Prof. Cristian Linte • Thesis title: <i>From fully-supervised single-task to semi-supervised multi-task deep learning for multi-modal medical image analysis</i>	<i>Aug 2017 - Dec 2022 (expected)</i> Rochester, New York
	Machine Learning Summer School (OxML) <i>University of Oxford</i> • Probabilistic / Statistical ML Parameter Optimization Self-supervised Learning (~ Top 5%)	Oxford, UK <i>Jul 2022 - Aug 2022</i>
	B.Sc. in Electrical and Electronic Engineering Khulna University of Engineering & Technology • Thesis title: <i>Combined feature extraction algorithm for sign language recognition</i> • Ranked Second in the class of 121 with GPA: 3.87/4.0	<i>Feb 2011 - Jun 2015</i> Bangladesh
INDUSTRY EXPERIENCES	Philips Research <i>AI Research and Development Intern</i> Mentors: Dr. Alvin Chen, Dr. Jonathan Rubin • Designed an optimized (60FPS) lung features detector on Ultrasound video data • Demonstrated 38% more accurate and had 86% less parameters compared to the baseline SSD model • Deployed the efficient framework (0.3 million) on an Android OS based mobile device	Cambridge, Massachusetts <i>Aug 2021 - Nov 2021</i>
	IBM Research <i>Machine Learning Research Intern</i> Mentors: Dr. Mehdi Moradi, Dr. Ken Wong, Dr. Tanveer Syeda-Mahmood • [Project 1] Built an interpretable repository of feature generators (AutoML) based on similarity and ranking algorithms which had 82.9% fewer parameters than the baseline, ResNet-50 (CVPR (in prep.)) • [Project 2] Restructured channel-wise pruning convolutional layers on classification tasks while achieving pruning ratios of up to 99.5% in parameters and 95.4% in FLOPs	San Jose, California <i>Aug 2020 - Nov 2020</i>
KEY PROJECTS	Generative Models and Disentangled Representation (<i>NSF Grant</i>) <i>Tensorflow, Python</i> • Implemented disentangled representation learning and variational auto-encoder to blend the image signal intensities with the 8 different anatomical structures to guide the synthesis of more texture information and generative adversarial models to generate labels from unlabeled data • Optimised with objective image quality metrics of 94% correlation coefficients and 29.0 decibels (dB peak-signal-to-noise ratio) yielding 83.3% semantic segmentation accuracy on a 4D cardiac MRI test dataset with only 1% labeled data Semi-supervised Meta Pseudo-labeling (<i>NSF Grant</i>) <i>PyTorch, Python</i> • Engineered a Student-Teacher (gradient-to-gradient) augmentation-driven meta pseudo-labeling model by exploiting self-training which yielded a 4.4% increase in 3D semantic segmentation accuracy with only 10% labeled data on 3D cardiac dataset Bayesian and Generative Adversarial Network (<i>NIH Grant</i>) <i>PyTorch, Python</i> • Implemented a multi-task cross-task learning network for joint segmentation and uncertainty (Bayesian estimation) estimation, yielding 7% accuracy improvement in 3D segmentation	
SKILLS	Programming Languages: Python, MATLAB, C/C++ (Basic), Bash Scripting APIs, Frameworks, Hardware, Software Systems, and Development Tools: PyTorch, Tensorflow, Keras, Scikit-Learn, OpenCV, SimpleITK, Version-Control (Git and Cmake), Vim, TMUX, Visual Studio	
AWARDS, HONORS, AND ACTIVITIES	[2020] NSF Award: MICCAI 2020 student travel award as a part of NSF Grant [2018] Best Paper Award: Western New York Image and Signal Processing Workshop [2012-2015] Dean's List: Awarded for achieving GPAs of 3.85 ~ 4.0 in six out of eight semesters [2020] Guest Speaker: RIT College of Science Co-op Workshop [2019-2022] Reviewer: Scientific Reports(Nature), NeurIPS, MICCAI, IJCARS, IPCAI, IEEE Access [More] Google Scholar Profile (Citations = 170) — Both independent and collaborative work	