

EDUCATION

Ph.D. Candidate, Computer Science Kansas State University, Manhattan, KS.	Aug 2024
MS, Computer Science Kansas State University, Manhattan, KS.	2019
BSc., Computer Science and Engineering Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.	2015

WORK EXPERIENCE

Knowledge Discovery in Databases (KDD) Lab, K-State. <i>Graduate Research/Teaching Assistant (Reinforcement Learning/GAN/Video Classification)</i>	Aug 2018 - Present
<ul style="list-style-type: none">Developed an improved actor-critic architecture and a non-contrastive representation learning framework for better generalization in RL, achieved competitive rewards with less computational overhead.Analyzed the role of value estimation and discounting in RL generalization tasks. Proposed value target augmentation and horizon regularized advantage estimation that use multiple discount factors to learn a generalizable policy.Developed a 3D ConvNet-based multi-stage approach for risky tackle detection from American football practice videos.	
DEKA Research and Development, Manchester, NH. <i>Machine Learning Intern (Visual Perception/Robotic Control)</i>	May 2023 - Aug 2023
<ul style="list-style-type: none">Worked with the autonomous robotics team on intelligent perception for medical devices and wheeled robots. Developed Segment Anything Model (SAM) based automatic annotation tool. Used YoloV7 to detect door status for navigation.	
C2FO, Leawood, KS. <i>Data Scientist Intern (NER/Topic Modelling/Document Classification)</i>	Jun 2018 - Aug 2018
<ul style="list-style-type: none">Analyzed LDA based topic modelling and word2Vec based Doc2Vec - for document classification in C2FO's context.Performed Named Entity Recognition(NER) from a collection of email response using Bi-LSTM-CRF model.	
REVE Systems Ltd., Dhaka, Bangladesh. <i>Software Engineer (Android & Tizen Application Development)</i>	Oct 2015 - Oct 2016
<ul style="list-style-type: none">Developed front end android application <i>iTel Dialer</i> for VOIP calling and messaging which is used by 100M end users.	

TECHNICAL SKILLS

- Programming Languages:** Python, C, C++, Java, SQL, SML, Racket, Prolog, R.
- Machine Learning Frameworks:** PyTorch, TensorFlow, Keras, Scikit-learn.
- Reinforcement Learning Libraries:** Garage, RLlib, OpenAI Baselines, Stable Baselines.
- Others:** OpenAI Gym, OpenCV, Gensim, NLTK, Bash, Git, Docker, Android Studio, Microsoft Visual Studio, L^AT_EX.

SELECTED PUBLICATIONS

- Nafi, N.M., and Hsu, W. (2023). Reinforcement Learning with Augmentation Invariant Representation: A Non-contrastive Approach. In *Generalization in Planning (GenPlan) Workshop, NeurIPS 2023*.
- Nafi, N.M., Poggi-Corradini, G. and Hsu, W. (2023). Policy optimization with Augmented Value Targets for Generalization in Reinforcement Learning. In *IEEE IJCNN 2023*.
- Nafi, N.M., Ali, R.F. and Hsu, W. (2022). Analyzing the Sensitivity to Policy-Value Decoupling in Deep Reinforcement Learning Generalization. In *Deep RL Workshop, NeurIPS 2022 & Extended Abstract, AAMAS 2023*.
- Nafi, N.M., Glasscock, C. and Hsu, W. (2022). Attention-based Partial Decoupling of Policy and Value for Generalization in Reinforcement Learning. In *21st IEEE ICMLA 2022 & Deep RL Workshop, NeurIPS 2021*.
- Nafi, N.M., Ali, R.F. and Hsu, W. (2022). Hyperbolically Discounted Advantage Estimation for Generalization in Reinforcement Learning. In *Decision Awareness in RL Workshop, ICML 2022*.
- Ali, R.F., Duong, K., Nafi, N.M., and Hsu, W. (2022). Multi-Horizon Learning in Procedurally-Generated Environments for Off-Policy Reinforcement Learning. In *Student Abstract and Poster Program, AAAI 2023*.
- Nafi, N.M., Dietrich, S. and Hsu, W. (2022). Risky Tackle Detection from American Football Practice Videos using 3D Convolutional Networks. In *Proc. of 18th Int. Conf. on Machine Learning and Data Mining (MLDM)*.
- Nafi, N.M. and Hsu, W. (2020). Addressing Class Imbalance in Image-Based Plant Disease Detection: Deep Generative vs. Sampling-Based Approaches. In: *Proc. of 27th International Conference on Systems, Signals and Image Processing*.
- Nafi, N.M., Bose, A., Khanal, S., Caragea, D. and Hsu, W. (2020). Abstractive Text Summarization of Disaster-Related Documents. In: *Proc. of 17th International Conference on Information Systems for Crisis Response and Management*.