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SUMMARY

Research & Industry Experience: 5+ years of experience on building state-of-the-art ML algorithms with scalable and data-driven techniques.
Programming Languages: Python (Proficient), Java, Scala, Swift, Dart, Bash Script.
Libraries/Services: PyTorch/TensorFlow (Proficient), Spark, AWS, GCP, BigQuery, Hadoop, Keras, Scikit-learn.

EDUCATION

PhD in CS – University of California, San Diego (UCSD) *Sep. 2018 – Present*

- Research Focus and Interests: Debiasing Generative Networks, Recommender Systems, Multi-Modal Learning, Federated Learning, Scalable Machine Learning Algorithm

MS in CS – University of California, San Diego (UCSD) *Sep. 2018 – March 2021*

- Coursework: Neural Networks/Pattern Recognition, Deep Learning for Sequences, Deep Unsupervised Learning, Computer Vision, Convex Optimization

BS in CS – Bangladesh University of Engineering and Technology (BUET) Apr. *2012 – Feb. 2017*

- Coursework: Database, Operating System, Computer Networks, Software Development, Artificial Intelligence, Simulation and Modelling, Machine Learning, Pattern Recognition

EXPERIENCE

Adobe, Inc. **San Jose, USA**
Research Scientist Intern *June 2022 – Sep. 2022*

- **Scalable Video Fingerprinting:** Built a scalable, end-to-end pipeline using FAISS library that can trace a manipulated video in less than a second from a trusted database with millions of corpuses.

Adobe, Inc. **San Jose, USA**
Computer Vision, Imaging & Video Intern *June 2021 – Sep. 2021*

- **Debiasing Image-to-Image Translation:** Pretrained StyleGAN2 based networks show various biases in different image-to-image translation tasks (such as super-resolution, sketch-to-image, etc.). Mitigated this bias issue using contrastive learning and uniform sampling of minority attributes.

Adobe, Inc. **San Jose, USA**
Data Science Intern *June 2020 – Sep. 2020*

- **Bias Detection and Mitigation:** Identified the bias issue in the image results for search queries, proposed a way to audit. In addition, proposed an attribute-controlled style-based generator to create new content to mitigate such biases and enrich user experience [accepted in WACV'22].

Etsy, Inc. **New York, USA**
Data Science Intern *June 2019 – Sep. 2019*

- **Intent Detection for Recommendation:** Captured users' hidden intents (i.e. explore, purchase) from their interactions by designing a hierarchical Transformer model. It first discovers the intent and then pays attention to it for next item prediction (improved recommendations by **5%**) **[Pdf]**.

University of California, San Diego **San Diego, USA**

Graduate Student Researcher *Sep. 2018 – Present*

- **Dynamic Convolution:** Built an adaptive convolution network which changes its kernel dynamically depending on the current input (**~10%** better recommendations, accepted in **CIKM 2020**) **[Pdf] [Code]**.
- **Visual Commonsense Reasoning:** Enforced reasoning for ans. prediction on **VCR** by building a differentiable module which jointly trains ans. and rationale prediction (performed better in leaderboard) **[Pdf] [Code]**.
- **CNN for Sequences:** Improved the scalability of sequential recommender methods by modelling a scalable depth-wise separable 1D convolution neural network (requires **~30%** less memory) **[Pdf]**.
- **Rationale Generation:** Tasked state-of-the-art Visual Question Answering model (ViLBERT) with rationale generation (using GPT-2) to interpret/justify answer prediction. It improves accuracy by **1.5%** as well **[Pdf]**.

Graduate Teaching Assistant *Fall'19,'20, Winter'20,'22, Spring'20,'21*

- **Neural Networks/Pattern Recognition:** Designed and assessed assignments on DNN, CNN (Image Segmentations), and RNN/LSTM (Image Captioning). Responsible for mentoring deep learning projects.

BUET **Dhaka, Bangladesh**

Research Assistant *Oct. 2017 – Aug. 2018*

- **Scalable Machine Learning:** Improved the scalability of PCA for large datasets (up to **83×** better performance) using sketching technique **[Pdf] [Code]**.
- **Distributed Algorithm Design/Federated Learning:** Extended both Spark and Hadoop for creating geo-distributed clusters in AWS and designed geo-distributed algorithms for higher dimension data **[Code]**.

SELECTED PUBLICATIONS

- **Md Mehrab Tanjim**, K.K. Singh, K. Kafle, R. Sinha, G.W. Cottrell, "Debiasing Image-to-Image Translation Models", *in theproceedings of British Machine Vision Conference (BMVC), 2022.*
- **Md Mehrab Tanjim**, K.K. Singh, K. Kafle, R. Sinha, G.W. Cottrell, "Discovering and Mitigating Biases in CLIP-based Text-to-Image Generation", *in the workshop of Responsible Computer Vision at ECCV, 2022* **[Pdf]**.
- **Md Mehrab Tanjim**, R. Sinha, K.K. Singh, S. Mahadevan, D. Arbour, M. Sinha, G.W. Cottrell, "Generating and Controlling Diversity in Image Search", *in the proceedings of Winter Conference on Applications of Computer Vision (WACV), 2022* **[Pdf]**.
- T.M. Tariq Adnan, **Md Mehrab Tanjim** and Muhammad Abdullah Adnan, "Fast, Scalable and Geo-Distributed PCA for Big Data Analytics", *Elsevier Journal on Information Systems*, 2021 **[Pdf] [Code]**.
- **Md Mehrab Tanjim**, C. Su, E. Benjamin, D. Hu, L. Hong and J. McAuley, "Attentive Sequential Models of Latent Intent for Next Item Recommendation*", in the proceedings of the Web Conference (WWW), 2020* **[Pdf]**.
- **Md Mehrab Tanjim**, Hammad A. Ayyubi, Garrison W. Cottrell, "DynamicRec: A Dynamic Convolutional Network for Next Item Recommendation", *in the proceedings of the Conference on Information and Knowledge Management (CIKM), 2020* **[Pdf] [Code]**.
- **Md Mehrab Tanjim** and Muhammad Abdullah Adnan, "sSketch: A Scalable Sketching Technique for PCA in the Cloud", *in the proceedings of Web Search and Data Mining (WSDM), 2018* **[Pdf] [Code]**.

REFERENCE

- **Dr. Garrison W. Cottrell**
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