Maharshi **Gor**

Deep Learning Researcher · Software Engineer

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Skill Set

Research Interests: NLP, Computer Vision, Deep Learning, Machine Learning, Representation Learning, Adversarial Learning

Tools and Technologies: Python, Java, C/C++, R, Matlab, JavaScript, SQL, Redis, Neo4j, DGraph

Frameworks: PyTorch, TensorFlow, Keras, Apache Beam, Django, Scipy, Scikit-Learn, Pandas, Spring, Angular, AWS

Education

University of Maryland
College Park, MD, US

M.S. and Ph.D. in Computer Science — Artificial Intelligence | GPA: 4.0/4.0

Fall 2021 - Fall 2026

Visvesvaraya National Institute of Technology (VNIT)
Nagpur, India

B.Tech. in Computer Science and Engineering

July 2012 - May 2016

Research/Work Experience

X, the Moonshot Factory / Google Labs
Mountain View, CA, United States

Research Resident | Mentors: Michele Catasta, Aakanksha Chowdhery, Christian Szegedy

May. 2022 - PRESENT

- **Semi-confidential work on long-context document understanding and Code synthesis.**

Google Research
New York, United States

AI Researcher, NLP | Mentors: Prof. Jordan Boyd-Graber, Prof. William Cohen

Aug. 2019 - Aug. 2021

- **Towards Deconfounding the Influence of Subject's Demographic Characteristics in Question Answering** [EMNLP 2021]
  - An **analysis study on Question Answering tasks**: Do subject's demographic characteristics matter when models answer a question from four prominent QA Tasks: NQ, SQuaD, QuizBowl and TriviaQA, and if yes what traits entail?
  - Are questions about some professions or gender easier than the others? What skews are presents in these datasets, and do these translate to model accuracies?
- **MATE: Multi-view Attention for Table Transformer Efficiency** [EMNLP 2021, Oral]
  - A novel architecture that **leverages the structure of web tables** to **create Transformer models that have both better inductive bias and a lower(linear) asymptotic memory footprint**, and allows them to scale to sequence lengths of more than 8000 tokens.
  - For HybridQA, a large-scale tabular Question Answering dataset that involves large structured and unstructured data, **we improve results by more than 19 points on accuracy.**

Video Analytics Lab
Bengaluru, India

Visiting Researcher | Advisor: Prof. R Venkatesh Babu

Jan. 2018- Apr. 2019

- **GAN-Tree: An Incrementally Learned Hierarchical Generative Framework for Multi-Modal Data Distributions** [ICCV 2019]
  - A hierarchical tree framework for Generative Adversarial Networks (GANs) for learning multimodal disjoint data distributions supporting incremental learning of data samples from a new distribution and maintaining persistency across all versions
- **BiHMP GAN: Bidirectional 3D Human Motion Prediction GAN** [AAAI 2019, Spotlight]
  - A generative approach for 3D human skeleton sequences using a novel Discriminator architecture, enabling content loss in a probabilistic framework
  - Shows superiority, both in terms of qualitative and quantitative measures, over previously available state of the art methods for both long-term human motion generation and short-term forecastings.
- **Unsupervised Feature Learning of Action Sequences as Trajectories in Pose Manifold** [WACV 2019, Oral]
  - Modelled sequences of the pose embeddings as a trajectory in the pose manifold.
  - Achieved competitive state-of-the-art results for action recognition task with minimal supervision on labeled information while comparing against previous fully-supervised deep learning approaches.
- **Pose2Vec - Unsupervised Framework for learning 3D Human Pose embeddings**
  - Hierarchical human skeletal pose modeling framework, using novel variant of Generative Adversarial Networks (GANs), enabling one shot inference from skeleton space to latent space.
  - A Python Library for all preprocessing steps for human-skeleton related tasks implemented in Numpy and Tensorflow.
- **Multi scaled Protein Molecule Detection and Counting from an Image**
  - A business usecase project of Hyperworks Imaging Private Ltd in collaboration with Video Analytics Lab, IISc.
  - YOLO based Multi-scaled CNN architecture to detect and count molecules of radius ranging from 5µm to 200µm.

Amazon — ***Bengaluru, India***

Software Engineer | Amazon Android Appstore — ***Aug. 2017 - Dec. 2017***

- Contributed to re-architecture of the back-end services for App Submission and Catalog Ingestion.
- Contributed to Database migration from Oracle to Postgres

Trilogy Innovations — ***Bengaluru, India***

Software / Innovation Engineer — ***July. 2016 - July. 2017***

- **Semantics Addition and Relevance Improvement of a Search Engine of an intra-org social network using a Knowledge Graph.**
  - Achieved Word Sense Disambiguation through Lexical and Topological Query Enrichment using Community Clustering on KG.
  - Reduced the TP90 response time from 8s to 500 ms
- **Fuzzy Classification System for source code commits of projects on Version Control Systems.**
  - Developed a commit classification system over a VCS and automated it as service for continuous provision of comprehensive details of the kind of contribution made by a developer on/across project(s)
- **A Gamification Framework around agile processes for achieving enhanced productivity of software developers.**
  - Product-designer and primary architect of the core framework.
  - Created 20 new code quality metrics for measurement of various categories of developer productivity.
  - Introduced, developed, and shipped the prototype to the client in 6 months period.

Publications

Maharshi Gor, Gaurang Sriramanan, Soheil Feizi, "Toward Efficient Robust Training against Union of L_p Threat Models", ***Neural Information Processing Systems (NeurIPS), 2022*** [Oral at ADVML FRONTIERS, ICML]

Maharshi Gor, Kellie Webster, Jordan Boyd-Graber, "Toward Deconfounding the Influence of Entity Demographics for Question Answering Accuracy", ***Empirical Methods in Natural Language Processing (EMNLP), 2021*** [pdf] [arXiv]

Julian Martin Eisenschlos, **Maharshi Gor**, Thomas Müller, William W. Cohen, "MATE: Multi-view Attention for Table Transformer Efficiency", ***Empirical Methods in Natural Language Processing (EMNLP), 2021*** [pdf] [arXiv]

Jogendra Nath Kundu*, **Maharshi Gor***, Dakshit Agrawal, R. Venkatesh Babu, "GAN-Tree: An Incrementally Learned Hierarchical Generative Framework for Multi-Modal Data Distributions", ***IEEE International Conference on Computer Vision (ICCV), 2019*** [pdf] [arXiv]

Jogendra Nath Kundu*, **Maharshi Gor***, R. Venkatesh Babu, "BiHMP GAN: Bidirectional 3D Human Motion Prediction GAN", ***33rd AAAI Conference on Artificial Intelligence, 2019*** [pdf] [arXiv]

Jogendra Nath Kundu*, **Maharshi Gor***, Phani Krishna Uppala, R. Venkatesh Babu, "Unsupervised Feature Learning of Action Sequences as Trajectories in Pose Manifold", ***IEEE Winter Conf. on Applications of Computer Vision (WACV), 2019*** [pdf] [arXiv]

** equal contribution - names listed alphabetically*

Honors & Awards

2021 **Student Conference Travel Award by EMNLP**, EMNLP 2021

2021 **Dean's Fellowship and Chair's Fellowship Award**, University of Maryland, College Park

2019 **Microsoft Research Travel Grant**, AAAI 2019

2019 **ACM India-IARCS Travel Grant**, AAAI 2019

2018 **Country Rank (United States) 60, across 100,000 active users**, CodeChef Rankings — ***Profile Link***

2013–16 **Top 60 every year, across over 6000+ teams** , ACM ICPC (International Collegiate Programming Contest) on-site Asia Regionals

2013–15 **Consistent 1st prize Winner**, Freak-O-Matix, the open mathematics Olympiad at VNIT (Undergrad)

2009-11 **Country Rank (India) 22, State Rank in top 5**, Indian National Mathematics Olympiad (INMO)

Activities

2021 **Program Committee Member**, Workshops in **ACL 2022**, **NAACL 2022**

2020-21 **Reviewer**, ICLR 2022, NeurIPS 2021, ACL 2021, EMNLP 2020, ICML 2020, ACL 2020

2018 **Problem Setter**, MindSpark 18 Codeathon, organized by College of Engineering, Pune on Codechef. — ***Pune, India***

2017 **Problem Setter**, CodeAgon 2017 - The All India Hiring Challenge for Codenation Solutions. — ***Bengaluru, India***