

NAGUR SHAREEF SHAIK

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Career Profile

As a Computer Science Graduate Student and Research Assistant at TReNDS Center, Georgia State University, I specialize in Deep Learning and research, with a focus on optimizing ML models for data ranging from very small to large datasets, particularly in AI applications for Medicine and Neuroimaging. With 4+ years of industry and research experience, I have developed novel attention networks, multi-modal fusion techniques, and transformer-based vision-language models for medical image classification and diagnostic report generation. My work has been published in 14 high-impact journals and presented at 4 top-tier conferences and workshops, advancing AI in healthcare.

Education

Georgia State University

Aug. 2023 – May. 2024 (Expected)

Masters of Science (Thesis) in Computer Science - CGPA 4.0/4.0

Atlanta, GA, USA

Courses: Advanced Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, Digital Image Processing, Computational Intelligence, Fundamentals of Data Science,

Vignan's Foundation for Science, Technology & Research University

Jun. 2016 – May 2020

Bachelors of Technology (Honours) in Computer Science & Engineering - GPA 3.92/4.0

Andhra Pradesh, India

Professional Experience

Translational Research in Neuroimaging & Data Science (GT, GSU & Emory)

Aug. 2023 – Present

Research Assistant at TReNDS Center

Atlanta, GA, USA

- **Multi-Modal Imaging Genomics Transformer:** Pioneered a fusion model combining genomics with sMRI and fMRI, elevating schizophrenia diagnosis accuracy by **2.12%** and uncovering vital neuro-genetic markers.
- **Multi-Modal Medical Transformer:** Designed a vision-language model integrating retinal image features with clinical keywords, resulting in a **13.5%** increase in BLEU-4 score over GPT-2 for diagnostic report generation.
- **Guided Context Gating:** Innovated an advanced attention model that optimizes context learning in retinal images, amplifying diagnosis accuracy by **2.63%** over advanced attention methods and **6.53%** over Vision Transformers.
- **Spatial Sequence Attention Network:** Formulated a unique attention mechanism to highlight schizophrenia-specific regions in brain sMRI, increasing diagnostic accuracy by **6.52%** and providing critical neuroanatomical insights.
- **Cancer Assist:** Developed a ML framework for an intra-operative intelligent system aiding surgeons in cancer surgery.

Carelon Global Solutions (subsidiary of Elevance Health)

Sep. 2022 – Aug. 2023

Software Engineer III | Developer

Hyderabad, Telangana

- **COMPensation INCentive System:** Developed RESTful APIs for high-performance microservices-based application to validate, compute and pay incentives using Java and Spring Boot, adhering standard coding practices in agile way.
- **Data Cleaning:** Automated transactions data clean-up using Python & SQL improving operational efficiency and saving 20% of incentive over payments.
- Swiftly resolved critical production issues, preventing 20% potential revenue loss and ensuring seamless operations.

Tata Consultancy Services

Aug. 2020 – Sep. 2022

Software Engineer | Analytics & Insights

Hyderabad, Telangana, India

- **Jeopardy Automator:** Developed an automated bug root cause prediction system with an Attention-based LSTM in Azure ML Studio, cutting debugging time by **60%**, driving cost-efficient resource allocation & development cycles.
- **Order Data Orchestrator:** Optimized data pipelines to streamline order orchestration, reducing fallouts by **30%** and ensuring seamless real-time data flows across hybrid IT environments.
- **Operational Dashboards:** Achieved a **\$3M** revenue profit increase through enhanced operational transparency and data-driven decision-making enabled by interactive dashboards visualizing order trends and business insights.
- **Auto Deployer:** Architected Azure DevOps Model Deployment pipeline, achieving a **40%** reduction in deployment time and increasing system availability by **25%** for streamlined Machine Learning model artifacts deployment.

Technical Skills

Programming Languages: Python, Java, JavaScript, Structured Query Language (SQL)

AI & Machine Learning: PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, NLTK, SpaCy, NumPy, Pandas, Tableau, Matplotlib, Deep Learning (Neural Networks, Transformers, LLMs), Computer Vision, Natural Language Processing (NLP)

Web Technologies: Spring Boot, Microservices, REST APIs, Databases, Git, Bitbucket, Agile, Jira, SDLC

Cloud & Deployment: Azure DevOps, AWS Services, Azure ML Studio, MLFlow, CI/CD, Docker, Jenkins, Kubernetes

Research Interests: Multimodal Learning, Vision Language Models, Attention Neural Networks, Medical Image Analysis

Certifications: Microsoft Certified Azure AI Fundamentals, Deep Learning Specialization, Python for Everybody

Master's Thesis

Guided Context Attention | Advisor: *Dr. Dong Hye Ye*

Aug. 2023 - Dec. 2024

- This thesis introduces an innovative Vision-Language Transformer designed to integrate multi-modal medical images with clinical text for enhanced medical captioning. A novel adaptive attention mechanism, Guided Context Attention, dynamically adjusts to capture local, global, or hybrid features based on the imaging modality, leveraging a guiding signal alongside base features. Additionally, a Transformer-based Fusion module attentively integrates visual attention features with clinical text embeddings, while a Transformer Decoder generates contextually rich medical captions.

Academic / Research Projects

Retinal Image Clinical Description Generator | *Python, Flask, MySQL, TensorFlow, Deep Learning*

Jun 2023

- In this project, we designed a Gated contextual attention based Transformer to generate clinical findings from multi-modal retinal images to improve medical decision-making and patient care.

Retinal Health Diagnostics - Intelligent CAD System | *Python, Flask, MySQL, TensorFlow, Deep Learning*

Jan. 2022

- In this project, we designed and implemented a deep learning based architecture for automatically diagnosing retinal diseases including cataracts, diabetic macular edema, diabetic retinopathy from digital fundus images of retina. This application generates a report with diagnosis details and preliminary clinical recommendations along with the markers involved in making clinical decisions.

Recruit Right | *Java, Spring Boot, SQL, Maven*

May 2021

- In this project, we designed a job portal where recruiters can easily identify and hire top profiles matching their needs and requirements. This application handles initial resume screening, interview scheduling and feedback reporting which are major aspects of hiring process

Multi-lingual Neural Machine Translation | *Python, TensorFlow, Deep Learning, NLP*

Jan. 2020

- In this project, we design and implement a attention based sequence to sequence model which takes a English sentence as input and predict the translation of the into French, German and Hindi languages. We used Anki bilingual sentence pairs dataset for our experiments.

Birthday Greetings App | *Java, Spring Boot, JSP, MySQL, HTML, CSS, JS*

Apr. 2019

- In this project, we designed a Web Application that facilitates the end users to convey their wishes to friends by sending a greeting card to their email.

Online Examination System | *Java, Servlets, JSP, JDBC, MySQL, HTML, CSS, JS*

Dec. 2018

- In this project, we designed a Web Application which facilitates the organization to conduct objective questions based examinations in online mode.

Academic & Research Accomplishments

- Published innovative research in **14** high-impact **journals** and presented findings at **3** top-tier **conferences**, pioneering novel attention networks, multi-modal fusion techniques, and transformer-based vision-language models for applications in medical image classification and diagnostic report generation demonstrating advancements of AI in Medicine. [Google Scholar](#)
- Reviewed for 25 international journals, including IEEE Access, IEEE Transactions on Medical Imaging Computers in biology and medicine, and more; [*Click here*](#)
- Delivred guest lectures on Machine Learning and Deep Learning Applications at VRSEC for 2 consecutive years.

Professional Certifications

- **Microsoft Certified Azure AI Fundamentals** Course offered by '**Microsoft**'.
- **Building Deep Learning Models with Tensor Flow** Course offered by '**IBM**' through Coursera.
- **Deep Learning Part-1** Course with Elite-Silver offered by '*IIT-Madras*' through NPTEL.
- **Neural Networks and Deep Learning** Course offered by '*deeplearning.ai*' through Coursera.
- **Convolutional Neural Networks** Course offered by '*deeplearning.ai*' through Coursera.
- **Structuring Machine Learning Projects** Course offered by '*deeplearning.ai*' through Coursera.
- **Python for Everybody** Python Specialization Course offered by '*University of Michigan*' through Coursera.
- **Business English Communication (Vantage)** Test in 2018 conducted by '*Cambridge University*'.

Awards & Recognitions

- Received **Go Above - Impact** Award for analysing the complete code-base and fixing a critical issue from *Elevance Health* while working at *Carelon Global Solutions*
- Received **Star Performer** Award for extreme Contributions in Project Work from *Tata Consultancy Services*
- Received **Chairman's Gold Medal** Award for overall excellence throughout B.Tech from Vignan's Foundation for Science, Technology & Research University
- Received **Best Outgoing Student of CSE** Award for academic and research excellence throughout B.Tech from *Vignan's Foundation for Science, Technology & Research University*
- Received **Academic Excellence Award** continuously for all four years during B.Tech, as a recognition for being one of the top 5 rank holders of CSE, from *Vignan's Foundation for Science, Technology & Research University*
- Bagged multiple prizes in Technical Project Expo & Paper Presentation events at National-level Inter University Competitions throughout four years of my B.Tech

Research Publications

- [1] Teja Krishna Cherukuri et al. “Dynamic Contextual Attention Network: Transforming Spatial Representations into Adaptive Insights for Endoscopic Polyp Diagnosis”. In: *Proceedings of the IEEE International Symposium on Biomedical Imaging (ISBI)*. Under Review. IEEE, 2025.
- [2] Teja Krishna Cherukuri et al. “GCS-M3VLT: Guided Context Self-Attention based Multi-modal Medical Vision Language Transformer for Retinal Image Captioning”. In: *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. Under Review. IEEE, 2025.
- [3] Nagur Shareef Shaik, Teja Krishna Cherukuri, and Dong Hye Ye. “MedVLT: Focus & Fusion in Vision Language Transformer Yield Expert Precision in Medical Image Captioning”. In: *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. Under Review. Association for the Advancement of Artificial Intelligence, 2025.
- [4] Teja Krishna Cherukuri, Nagur Shareef Shaik, and Dong Hye Ye. “Guided Context Gating: Learning to Leverage Salient Lesions in Retinal Fundus Images”. In: *Proceedings of the IEEE International Conference on Image Processing (ICIP)*. Paper ID: 1605. 2024.
- [5] Nagur Shareef Shaik and Teja Krishna Cherukuri. “Gated contextual transformer network for multi-modal retinal image clinical description generation”. In: *Image and Vision Computing* 143.C (2024).
- [6] Nagur Shareef Shaik, Teja Krishna Cherukuri, and Dong Hye Ye. “M3T: Multi-Modal Medical Transformer to Bridge Clinical Context with Visual Insights for Retinal Image Medical Description Generation”. In: *Proceedings of the IEEE International Conference on Image Processing (ICIP)*. Paper ID: 1604. 2024.
- [7] Nagur Shareef Shaik et al. “Medtransnet: advanced gating transformer network for medical image classification”. In: *Machine Vision and Applications* 35.4 (2024), p. 73.
- [8] Nagur Shareef Shaik et al. “Multi-modal Imaging Genomics Transformer: Attentive Integration of Imaging with Genomic Biomarkers for Schizophrenia Classification”. In: *Proceedings of the MICCAI Workshop on AI for Imaging Genomic Learning (AIIG)*. arXiv preprint arXiv:2407.19385. 2024.
- [9] Nagur Shareef Shaik et al. “Spatial Sequence Attention Network for Schizophrenia Classification from Structural Brain MR Images”. In: *Proceedings of the 21st IEEE International Symposium on Biomedical Imaging*. IEEE. 2024.
- [10] Nagur Shareef Shaik and Teja Krishna Cherukuri. “Visual attention based composite dense neural network for facial expression recognition”. In: *Journal of Ambient Intelligence and Humanized Computing* 14.12 (2023), pp. 16229–16242.
- [11] Nagur Shareef Shaik and Teja Krishna Cherukuri. “Hinge attention network: A joint model for diabetic retinopathy severity grading”. In: *Applied Intelligence* 52.13 (2022), pp. 15105–15121.
- [12] Nagur Shareef Shaik and Teja Krishna Cherukuri. “Multi-level attention network: application to brain tumor classification”. In: *Signal, Image and Video Processing* 16.3 (2022), pp. 817–824.
- [13] Nagur Shareef Shaik and Teja Krishna Cherukuri. “Transfer learning based novel ensemble classifier for COVID-19 detection from chest CT-scans”. In: *Computers in Biology and Medicine* 141 (2022), p. 105127.
- [14] Jyostna Devi Bodapati, Nagur Shareef Shaik, and Veeranjanyulu Naralasetti. “Composite deep neural network with gated-attention mechanism for diabetic retinopathy severity classification”. In: *Journal of Ambient Intelligence and Humanized Computing* 12.10 (2021), pp. 9825–9839.
- [15] Jyostna Devi Bodapati, Nagur Shareef Shaik, and Veeranjanyulu Naralasetti. “Deep convolution feature aggregation: an application to diabetic retinopathy severity level prediction”. In: *Signal, Image and Video Processing* 15 (2021), pp. 923–930.
- [16] Jyostna Devi Bodapati et al. “Joint training of two-channel deep neural network for brain tumor classification”. In: *Signal, Image and Video Processing* 15.4 (2021), pp. 753–760.
- [17] Jyostna Devi Bodapati et al. “Msenet: Multi-modal squeeze-and-excitation network for brain tumor severity prediction”. In: *International Journal of Pattern Recognition and Artificial Intelligence* 35.07 (2021), p. 2157005.
- [18] Nagur Shareef Shaik and Teja Krishna Cherukuri. “Lesion-aware attention with neural support vector machine for retinopathy diagnosis”. In: *Machine Vision and Applications* 32.6 (2021), p. 126.
- [19] Jyostna Devi Bodapati et al. “Blended multi-modal deep convnet features for diabetic retinopathy severity prediction”. In: *Electronics* 9.6 (2020), p. 914.