AKM Shahariar Azad Rabby

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Aspiring machine learning engineer with five years of deep learning and computer vision experience. Seeking a summer 2024 internship to apply skills in 3D images, CNNs, object detection, image classification, and model deployment to industry challenges. Key expertise includes Python, TensorFlow, PyTorch, model training/testing, OpenCV, and dataset annotation. Passionate about leveraging ML solutions for complex problem-solving.

Education

2021 Aug–Current	**Ph.D. candidate in Computer Science, University of Alabama at Birmingham, AL, USA.** Diss.: Neural Radiance Fields (NeRF), Supervisor: *Dr. Chengcui Zhang.*
2021 Aug–2023 Apr	**M.Sc. in Computer Science, University of Alabama at Birmingham, AL, USA.** Relevant Coursework: ML, DL, NLP, CV, Data Science.
2015 Jan–2018 Dec	**B.Sc. in Computer Science & Engineering, Daffodil International University, Bangladesh.** 148 credits toward a Bachelor's degree. Thesis title: *Ekush: Bangla Handwritten Character Data Repository for NLP Research.*

Employment History

2021 Aug–Current — **Graduate Research Assistant and Blazer Fellow.** UAB Lung Imaging Lab, University of Alabama at Birmingham, AL, USA.
- » Working on NIH project Structural Determinants of Disease Progression in chronic obstructive pulmonary disease (COPD), achieved 91% COPD prediction on 3D CT
  - » Enhance understanding of lung disease structure-function relationships by 6%.
- » Working on NSF project Bubble Aid: Assistive AI to Improve the Robustness and Security of Reading Hand-Marked Ballots (collaborating with KDDM Lab UAB).

2019 Oct–2021 Aug — **Machine Learning Engineer.** Apurba Technologies, Bangladesh.
- » Promoted to Machine Learning Team Lead (Apr 2021)
- » Adhere to quality development principles while delivering solutions on time.
- » Maintain high standards of ML software & data quality within the team.
- » Analyze & resolve technical & application problems.
- » Improved OCR performance, optimizations, benchmark over 93%.

2019 Apr–2019 Oct — **Developer-AI.** Genex Digital. Dhaka, Bangladesh.
- » Integrated system with 4 chat applications, Chatlogy, Mira, Sarah & agent chat.
- » Improved chatbot answering accuracy by 25%, reduced processing time by 30%.

Community Service and Volunteering Activities

2017 Oct–Current — **Supervisors (Computer Vision).** DIU NLP & ML Lab.
- » Write, publish & present research in high-quality, peer-reviewed journals.
- » Build course module for Beat Python & ML for All.
- » Supervised more than 400 students' research activities, including projects.

2022 Jan–2022 Dec — **Communication Officer.** Bangladeshi Student Association at UAB, AL, USA.
- » Monitoring all the activities of the social networking pages of the organization.
- » Building & maintaining liaison with the other organizations & communities.

Selected Projects

COPDxNet
- » Created a model for COPD screening, utilizing inspiratory 3D CT images & multimodal data.
- » SOTA accuracy in standard & low-dose CT scans, with AUC values of 0.91 and 0.86, respectively.
- » Enhanced clinical efficiency by accelerating COPD predection to an average of 27.8 seconds.

Ekush 🌐 rabby.dev/ekush
- » Largest dataset of Bangla characters with 673K character instances & 242 class.
- » 340k female & 333k male data with 4 captions per image, including geolocation, gender, & age.
- » Dataset enhanced numerous projects on Bangla OCR, achieving accuracy improvements of 18%.
- » EkushNet CNN model boosted OCR accuracy by 15% and predicates 50% more character classes.

Selected Projects (continued)

- 🔖 **Programming a Real Self-Driving Car** 🌐 github.com/ShahariarRabby/CarND_Capstone
  - » Perception subsystem detects traffic lights & obstacles.
  - » Planning subsystem updates the waypoints & the associated target velocities.
  - » Control subsystem actuates the throttle, steering, & brake to navigate the waypoints with target velocity.
- 🔖 **GYMX** 🌐 github.com/ShahariarRabby/gymx
  - » Online gym management tool built with Laravel.
  - » Digitalized the system including online payment, task, chat & alert, etc.
- 🔖 **ISHARA-LIPI** 🌐 isharalipi.sanzidscloud.com
  - » First multipurpose characters & digits dataset for Bangla Sign Language(BdSL).
  - » 1,800 images of 36 classes.

Selected Publications

1. Ali, H.,, Rabby, A. S. A., & Rahman, F. (2023). Gold Standard Bangla OCR Dataset: An In-Depth Look at Data Preprocessing and Annotation Processes, (accepted). *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing: Industry Track.*

2. Rabby, A. S. A., & Zhang, C. (2023). BeyondPixels: A Comprehensive Review of the Evolution of Neural Radiance Fields. *arXiv e-prints*, arXiv–2306. https://arxiv.org/abs/2306.03000

3. Mollah, S.,, Rakib, M.,, Mohammed, N.,, Wasek, M.,, Rabby, A. S. A., & Rahman, F. (2023). Automated Mapping of Healthcare Concepts to a Standardized Healthcare Taxonomy. *Proceedings of the 2023 International Conference on Learning Representations (ICLR): Tiny Papers Track.* https://openreview.net/pdf?id=87oCobKKS6x

4. Das, A.,, Rabby, A. S. A.,, Kowsar, I., & Rahman, F. (2022). A Deep Learning-based Unified Solution for Character Recognition. *2022 26th International Conference on Pattern Recognition (ICPR)*, 1671–1677.

Read more publications at 🎓 Google Scholar

Skills

Coding	🔖	Python, C, C++, PHP, SQL, Java, HTML, CSS, SASS, JavaScript, LaTeX.
ML	🔖	TensorFlow, PyTorch, OpenCV, Neural Networks, CNNs, Object Detection, & Segmentation.
Framework	🔖	Django, Flask, Fast API, Laravel, AWS, EC2, S3, REST API, Docker, Cloud Computing, Triton.

Nanodegrees & Certificates

- 🔖 **Deep Learning Nanodegree Program**, Udacity.
- 🔖 **Computer Vision Nanodegree Program**, Udacity.
- 🔖 **Self Driving Car Engineer Nanodegree Program**, Udacity.
- 🔖 **Deep Learning Specialization.** deeplearning.ai, Coursera.
- 🔖 **Machine Learning.** Stanford Online, Coursera.
- 🔖 **TensorFlow in Practice Specialization.** deeplearning.ai, Coursera.

Awards & Grants

- 🔖 **Graduate Dean's Scholarship**, Recipient of the 2022 UAB National Alumni Society Graduate School Dean's Scholarship 2022.
- 🔖 **AI For Bangla 1.0**, Honorable Mention for the project *Ekush*.
- 🔖 **Blazer Fellowship**, Fellowships awarded annually to outstanding, highly qualified first-year doctoral trainees.
- 🔖 **Best Student Research Award (2018 & 2019)**, In recognition of the highest number of scholarly publications, Department of Computer Science & Engineering, Daffodil International University, Bangladesh.
- 🔖 **Best Paper Award**, For *Bangla Handwritten Digit Recognition using Convolutional Neural Network*, IEMIS conference, University of Engineering & Management, Kolkata, India.
- 🔖 **1st Runner Up**, 1st runner up on 3-minute pitching competition at *2nd Symposium on Bangla Computational Linguistics (SBCL)*, SUST, Sylhet.