

# AEYAN ASHRAF

Department of Computer Engineering  
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## EDUCATION

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### Aligarh Muslim University

📅 Aug 2019 – Jun 2023

*Bachelor of Technology in Computer Engineering - 9.155/10 CPI (First Division with Honours)*

📍 Aligarh, India

Relevant Coursework: *Object Oriented Programming, Principles of Machine Learning, Design & Analysis of Algorithms, Operating Systems, Computer Graphics, Computer Networks, Theory of Computation, Computer Architecture, Digital Logic and System Design, Database Management System, Discrete Mathematics, Higher Mathematics.*

## EXPERIENCE

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### The State University of New York at Binghamton

📅 Aug 2022 – Present

*Deep Learning Intern under [Dr. Adnan Siraj Rakin](#)*

📍 Binghamton, USA (Remote)

- Implemented and reviewed the literature of various backdoor attacks like BadNets, and WaNet.
- Currently working on the security aspect of deep learning algorithms.

### The University of Maryland

📅 Jun 2022 – Jul 2022

*Deep Learning Intern under [Dr. Mohammad Nayeem Teli](#)*

📍 College Park, USA

- Participated in AI-Enabled Medical Image Analysis (AIMIA) workshop at European Conference on Computer Vision 2022.
- Modified lightweight model Teli-Net for detecting COVID-19 from Computed Tomography (CT) scans.
- The resulting model demonstrated a 10% increase from the baseline “macro  $F_1$ ” score.

### Taibah University

📅 Jan 2022 – May 2022

*Deep Learning Intern under [Dr. Mohammad Zubair Khan](#)*

📍 Medina, KSA

- Developed Models using Knowledge Distillation for the purpose of Detecting Concrete Cracks.
- Deep Learning models such as EfficientNetB0 and MobileNetV2 were utilized.
- Utilized Grad-CAM in order to visualize the layer gradients.

### Aura Estates Ltd.

📅 Sep 2021 – Dec 2021

*Flutter Intern*

📍 Dunstable, UK

- Created an Android application using Flutter and Dart and deployed the app on the Google Play Store. [\[Link\]](#)
- Hosted the backend on Firebase & implemented authentication using Google API.

### Aligarh Muslim University

📅 Jan 2021 – Jun 2021

*Research Assistant under [Dr. Asad Malik](#)*

📍 Aligarh, India

- Utilized Deep Learning and Machine Learning to work on Segmentation and Classification projects.
- Conducted a literature review and developed models using transfer learning for detection of COVID-19 by means of Convolutional Neural Networks.
- The resulting work was published as a poster in SMARTTECH 2022, Saudi Arabia.

## PROJECTS

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### SSORT: Semantic Segmentation for Off-Road Traversability | *Python, PyTorch, Numpy, Pandas, OpenCV*

[\(Link\)](#)

- Leveraged Models like UNetFormer, Segmenter, U-Net, U-Net to segment off-road environments.
- Applied them on pre-processed Yamaha-CMU, Rellis-3D off-road datasets.

### Transformers in the field of Deep Learning

[\(Link\)](#)

- A survey based project to explore resource bound reasoning and learning its applications.
- Summarized Transformer Architecture as well as it's improvements like GPT, BERT, Transformer-XL, ViT and DeiT.
- Learned about the applications in Machine Translation, Document Summarization, Named Entity Recognition (NER), Biological Sequence Analysis.

### Concrete Crack Detection Using Convolutional Neural Networks | *Python, Keras, Tensorflow, Numpy, Pandas, OpenCV*

[\(Link\)](#)

- Used Transfer Learning and Knowledge Distillation with Models like MobileNetV2, EfficientNetB0, ResNet.
- Trained models on SDNET18 dataset and fine-tuned them on Mendley's Dataset.

### A Hybrid Approach for Image segmentation by Using Random Forest and VGG-16 Model | *Python, Scikit-learn, Numpy, OpenCV*

[\(Link\)](#)

- Programmed an ensemble of pre-trained VGG16 model and Random Forest Classifier.
- Used the developed Ensemble for Segmentation of images.

## PUBLICATIONS

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- **Ashraf, Aeyan**, Mohammad Ammar and Asad Malik. "A systematic review on DeepFakes Generation and Detection: Open Challenges and Countermeasures." (Manuscript under review in Journal of Imaging, MDPI)
- **Ashraf, Aeyan**, Aquib Iqbal, Abid Hasan Zim, Asad Malik, and Minoru Kuribayashi. "Zea Mays Leaf Disease Classification using Swin-Transformer." (Manuscript under review in Computers and Electronics in Agriculture, Elsevier) [\[Pdf\]](#)
- Malik, Asad, **Aeyan Ashraf**, Hanzhou Wu, and Minoru Kuribayashi. "Reversible Data Hiding in Encrypted Text Using Paillier Cryptosystem." In 2022 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC), pp. 1495-1499. IEEE, 2022. [\[Slides\]](#) [\[Pdf\]](#)
- Zim, Abid Hasan, **Aeyan Ashraf**, Aquib Iqbal, Asad Malik, and Minoru Kuribayashi. "A Vision Transformer-Based Approach to Bearing Fault Classification via Vibration Signals." In 2022 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC), pp. 1321-1326. IEEE, 2022. [\[Slides\]](#) [\[Pdf\]](#)
- **Ashraf, Aeyan**, Asad Malik, and Zahid Khan. "POSTER: Diagnosis of COVID-19 through Transfer Learning Techniques on CT Scans: A Comparison of Deep Learning Models." 2022 2nd International Conference of Smart Systems and Emerging Technologies (SMARTTECH), 2022, pp. 12-13, doi: 10.1109/SMARTTECH54121.2022.00018. [\[Slides\]](#) [\[Pdf\]](#)

## TECHNICAL SKILLS

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**Languages:** Python, C/C++, Java.

**Technologies/Frameworks:** Keras, TensorFlow, Numpy, Pandas, Matplotlib, OpenCV, PyTorch.

**Tools:** Git, VS Code, Visual Studio, Microsoft Visio, Google Colab, Pycharm, L<sup>A</sup>T<sub>E</sub>X.

**Operating Systems:** Windows, Linux, macOS.

**Soft Skills:** Communication, Teamwork, Problem-solving, Time management, Critical thinking.

## ACHIEVEMENTS & EXTRA-CURRICULAR

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- Among the top 30 students from Aligarh Muslim University to be honored with the **Sir Syed Mentoring and Assistance Fellowship (SSMAF)** for pursuing higher studies from abroad.
- Selected in the 6<sup>th</sup> **Summer School on Artificial Intelligence** with a focus on Computer Vision organized by the Centre for Visual Information Technology (CVIT), International Institute of Information Technology Hyderabad (IIIT-H). [\[Certificate\]](#).
- Selected as a delegate from a vast pool of candidates for Harvard Project for Asian and International Relations (HPAIR) 2022 and awarded a 50% scholarship for attending the same. [\[Decision Letter\]](#).
- Participated in a 7 day workshop on "**Cyber Security Essentials**" organized by the Department of Computer Science, Aligarh Muslim University, Aligarh. [\[Certificate\]](#).
- Presented a research paper at the 2nd International Conference of Smart Systems & Emerging Technologies (SMARTTECH) held at Prince Sultan University, Riyadh, Saudi Arabia. [\[Certificate\]](#).
- Attended five days online workshop on "**Cyber Security and Digital Forensics**" (26-30 August 2021) organized by the Department of Computer Science, Aligarh Muslim University, Aligarh. [\[Certificate\]](#).
- Ranked among the top 5 out of 100+ teams in AMU Battlegrounds hackathon.
- UPSTSE Scholar: Among the 1000 students selected from all over Uttar Pradesh for scholarship on the basis of a competitive exam.
- Received Certificate of Merit from Central Board of Secondary Education for scoring 10 CGPA in High School.

## PROFESSIONAL MEMBERSHIPS & VOLUNTEERING

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1. Institute of Electrical and Electronics Engineers (IEEE) Member
  - (a) Facilitated the IEEE Student Branch, AMU in hosting a variety of events, including workshops, seminars, and webinars. [\[Certificate of Membership\]](#)
  - (b) Delivered a lecture to 50 students about Deep Learning & Computer Vision as a part of the workshop organized by IEEE Computer Society, Aligarh Muslim University.
  - (c) Founding student Chairperson of the IEEE Computer Society branch of the Aligarh Muslim University.
2. ActionAid India Distinguished Volunteer
  - (a) As part of the social media team, supported various micro-campaigns aimed at raising awareness on issues related to COVID-19.
  - (b) Helped ActionAid India in reaching out to new audiences with donation appeals for raising funds for ActionAid Association's relief distribution efforts across 24 states in India. [\[Certificate\]](#)
3. SOCH...beyond the imagination Coordinator, Technical Team
  - (a) Volunteered to teach mathematics to a class of 25 students from unprivileged and under-represented backgrounds. [\[Letter of Certification\]](#)
  - (b) Donated two units of blood during the blood donation camp and helped spread awareness for the same.
4. Google Developers Student Club, ZHCET Member