Aneesh Bhattacharya

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Education

- **International Institute of Information Technology, Naya Raipur (IIIT-NR)** — Naya Raipur, India
  Bachelor of Technology - Computer Science and Engineering: CGPA: 9.17/10 — *July 2019 - June 2023*
  Courses: *Discrete Mathematics, Design and Analysis Of Algorithms, Statistical Data Analysis, Machine Learning Algorithms, Deep Learning, Computer Vision, Cloud Computing, Cryptography, Software Defined Networks (SDN)*

Experience

- **Research Intern - Purdue University and University of Maryland, USA** — Remote
  Mentor - Dr. Aniket Bera — *August 2022 - Present*
  - **DanceAnyWay: Synthesizing Mixed-Genre 3D Dance Movements Through Beat Disentanglement**: Currently working on generating genre-agnostic 3D dance pose sequences for music tracks using multimodal data with GANs and Seq2Seq models - PyTorch, OpenCV, Librosa, 3D Pose Estimation, AR/VR.
    Preparing for submission at SIGGRAPH 2023
- **Machine Learning Intern - Larsen & Toubro Technology Services, India** — Remote
  Mentor - Mr. Rajeswaran Chellapandi — *May 2022 - August 2022*
  - **Automated Labelling of P&ID Diagrams**: Developed an end-to-end deep learning system to automate the segmentation, labelling and counting of symbols on P&ID diagrams used in the Oil & Gas industry - PyTorch, OpenCV, PIL, EAST text detector, MMOCR.
- **Research Intern - IIIT NR, India** — Remote
  Advisor - Dr. Venkanna U. — *May 2021 - April 2022*
  - **P4-sKnock: A Two Level Host Authentication and Access Control Mechanism in P4 based SDN**: Designed and implemented an improved port knocking based host authentication and access control system for SDN hosts in P4 environments - P4 language, Mininet, Scapy, Wireshark.
  - **iDAM: A Distributed MUD Framework for Mitigation of Volumetric Attacks in IoT Networks**: Proposed and built a distributed and federated 2 level volumetric attack mitigation framework for SOHO networks using one-class classifier models - Scikit-Learn, Pandas, Flower (Federated Learning Framework), Socket, Scapy.
  - **CoviFL: Edge Assisted Federated Learning for Remote COVID-19 Detection in an AIoMT Framework**: Developed a novel distributed AIoMT system for COVID-19 detection using cough audio sounds and won the **best paper award at the IEEE ISCC - ICTS4eHealth** - Tensorflow, Flower, Librosa, Pydub.
- **Research Intern - IIT Kharagpur, India** — Remote
  Mentor - Dr. Jayanta Mukhopadhyay — *May 2021 - Febuary 2022*
  - **A Novel Visual Feature and Gaze Driven Egocentric Video Retargeting**: Developed a novel computer vision pipeline to retarget egocentric videos following cinematographic principles achieving ARS of 0.967, 0.73 and SSI of 60%, 42% on the GTEA, EGTEA Gaze Plus datasets - OpenCV, Pandas, Scikit-Learn, Numpy, Tensorflow.
  - **Interpreting User Gaze Data to Identify Objects of Interest Using Tobii Pro 2 Eye Tracker**: Built a data processing pipeline for converting raw Tobii Pro 2 eyetracker data into the EGTEA Gaze+ dataset format; Performed data analysis and designed a machine learning pipeline for identifying a user's object of interest using their gaze data - OpenCV, Pandas, Scikit-Learn, Numpy.
- **Research Intern - University of Dayton, USA** — Remote
  Mentor - Dr. Vijayan K. Asari — *May 2021 - October 2021*
  - **Wearable Walking Aid System to Assist Visually Impaired Persons to Navigate Sidewalks**: Proposed and developed a wearable system to assist visually impaired persons by detecting obstacles in their surroundings via their smartphone camera and informing them of the same through haptic feedback on different fingers through our developed wearable glove - TFLite, Android Studio, OpenCV (Java), RPi, Vibration actuators.

Publications

- **SIGGRAPH 2023 (Technical Repoprt Pre-print)**:
- **29th IEEE International Conference on Image Processing (IEEE ICIP), Bordeaux, France**: "A Novel Visual Feature and Gaze Driven Egocentric Video Retargeting"
- **27th Asia Pacific Conference on Communications (APCC), Korea**: "P4-sKnock: A Two Level Host Authentication and Access Control Mechanism in P4 based SDN"
- **27th IEEE Symposium on Computers and Communications (ISCC 2022), Rhodes Island, Greece**: "CoviFL: Edge-Assisted Federated Learning for Remote COVID-19 Detection in an AIoMT Framework" **- Best Paper Award**
- **13th IEEE/IET International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP 2022), Porto, Portugal**: "iDAM: A Distributed MUD Framework for Mitigation of Volumetric Attacks in IoT Networks"
- **50th IEEE Applied Imagery Pattern Recognition Workshop (AIPR), Washington D.C, USA**: "Wearable Walking Aid System to Assist Visually Impaired Persons to Navigate Sidewalks"

Honors and Awards

- **Best Paper Award**: IEEE Symposium on Computers and Communications - ICTS4eHealth Conference - 2022
- **1st Position (2400+ developers)**: Ernst and Young GDS (EY-GDS) Hackpions 3.0 - Hackerearth - October, 2021
- **Top 4 (1900+ developers)**: Ernst and Young GDS Hackpions - Hackerearth - November, 2020
- **Top 12 (7600+ developers)**: American Express Codestreet 2020 - Hackerearth - August, 2020
- **1st Position**: IoT innovative Challenge Ideathon - Comet Electronics Club, IIIT NR - August 2019

Skills Summary

- **Languages**: Python, Java, JavaScript, C++, SQL
- **Frameworks**: PyTorch, TensorFlow, Keras, Django, Scikit-Learn, NLTK, SpaCy, NodeJS, React Native
- **Research Interests**: Computer Graphics (AR/VR), MultiModal Learning, HCI & Cognitive Modeling
- **Platforms**: Linux, Windows, Azure, AWS, Arduino, Raspberry

Positions of Responsibility

- **Reviewer: IEEE Conference on Virtual Reality and 3D User Interfaces (VR) 2023**
  Ṙeviewer for 2 papers at the IEEE VR 2023
- **Teaching Assistant: CS102I** IIIT-NR, India
  Ṫ.A for the 2 credit CSE course IT Workshop for the B.Tech 2024 batch: Taught Python OOPS and Django 3.1
- **Head: Hack-A-Sol 2.0** IIIT-NR, India
  Ṫeam Lead for the 2nd edition of Hack-A-Sol hosted by IIIT Naya Raipur
- **Head: Tech4Gud** IIIT-NR, India
  Ḣead of the social welfare club of IIIT Naya Raipur