

# Ashutosh Chaubey

## Education

- 2017 - 2021 **Bachelor of Technology, Computer Science and Engineering**, Indian Institute of Technology, Roorkee, **CGPA 9.719/10.0 - Third-highest CGPA** amongst all the graduating students of IIT Roorkee 2021.
- 2017 **All India Senior School Certificate Examination, Delhi Public School, Bhilai, 97%**.  
(Central Board of Secondary Education)
- 2015 **All India Secondary School Examination, Delhi Public School, Bhilai, CGPA 10.0/10.0**.  
(Central Board of Secondary Education)

## Publications and Preprints

- 2022 **Improved Relation Networks for End-to-End Speaker Verification and Identification**, [🔗](#), Ashutosh Chaubey, Sparsh Sinha, Susmita Ghose, Preprint arXiv :2203.17218.  
[Paper Link] [Poster Link] - Published in the **Interspeech 2022**.
- 2021 **OPAD : An Optimized Policy-based Active Learning Framework for Document Content Analysis**, [🔗](#), Sumit Shekhar, Bhanu Prakash Reddy Guda, Ashutosh Chaubey, Ishan Jindal, Avneet Jain.  
[Paper Link] - Published in the **2022 IEEE CVPR Workshop on Fair, Data Efficient and Trusted Computer Vision**.
- 2020 **Universal Adversarial Perturbations : A Survey**, [🔗](#), Ashutosh Chaubey\*, Nikhil Agrawal\*, Kavya Barnwal, Keerat K. Guliani, Pramod Mehta, Preprint arXiv :2005.08087.  
[arXiv Preprint Link]
- 2019 **A GAN-based Ensemble Technique for Automatic Evaluation of Machine Synthesized Speech**, [🔗](#), Jaynil Jaiswal\*, Ashutosh Chaubey\*, Bhimavarapu Sasi Kiran Reddy, Shashank Kashyap, Puneet Kumar, Raman Balasubramanian, Partha Pratim Roy, Published in the **5th Asian Conference on Pattern Recognition (ACPR) 2019**.  
[Paper Link] [Presentation Link] [Poster Link]

## Research Experience

- Jul 2021 - Present **Data Scientist**, LG Ads Solutions (formerly Alphonso Inc.).
- Worked on state-of-the-art speaker verification models and techniques like RawNet, ECAPA-TDNN, etc. Implemented the techniques using Keras and PyTorch frameworks.
  - Used metric-based meta-learning techniques such as prototypical networks and relation networks to improve model performance - Paper currently under review at the **Interspeech 2022**.
  - Worked on neural fingerprinting for automatic content recognition (ACR) using contrastive learning.
  - Worked on analysing and producing insights from the TV viewing behaviour of the US population.
- May 2020 - Jul 2020 **Research Intern**, Big-data Experience Lab, Adobe Research India.
- Used deep Q learning to learn an optimal acquisition function for active learning by modelling the active learning scenario in to a Markov Decision Process.
  - Reduced the annotation effort by using a weak learning setting where the annotator just has to verify the current model predictions on acquired samples.
  - Used the human feedback from verification and the class imbalance in the acquired samples as an additional reward for the MDP.
  - Implemented the proposed technique using PyTorch framework and used Flask to build an interactive demo including the annotation framework.
  - **Patent** currently under the legal process of filing.

- May 2019 - Jul 2019 **Research Intern**, Video Analytics Lab, Indian Institute of Science, Bengaluru.
- Worked on multi-person human pose prediction using synthetic dual person dataset.
  - Due to unavailability of enough real training samples, developed a pipeline using Open CV to generate synthetic dual person dataset and their annotations.
  - Also worked on full human body shape prediction to predict the SMPL parameters of a person from single RGB image.
  - Implemented the proposed techniques using Tensorflow framework and used OpenCV for creating synthetic videos.

---

## Projects

- Jan 2020 - Apr 2020 **Survey on Universal Adversarial Perturbations**, [🔗](#).
- Comprehensive survey on attacks and defenses involving universal adversarial perturbations.
  - Compared existing techniques based on their fooling rates, ease of deployment and amount of data required.
  - [\[arXiv Preprint Link\]](#).
- Jan 2020 - Mar 2020 **Vehicle Speed Estimation using Deep Neural Networks**, under Prof. Raksha Sharma, IIT Roorkee.
- Developed a pipeline for vehicle speed estimation using CNNs with the PyTorch framework.
  - Experimented with the trained neural network to understand the model's sensitivity to certain parts of the input.
- Jan 2019 - Apr 2019 **Automatic Evaluation of Machine Synthesized Speech**, [🔗](#), under Prof. R. Balasubramanian, IIT Roorkee.
- Developed an ensemble based technique which uses discriminator from a speech synthesizing GAN to generate "humanness score" of machine synthesized speech.
  - Proposed a new metric - *Anthropomorphic Score*, free from human intervention, for evaluation of synthetic speech from Text-to-Speech models.
  - [\[Paper Link\]](#) [\[Presentation Link\]](#) [\[Poster Link\]](#)
- Feb 2019 **Variational Autoencoder for MNIST**, [🔗](#).
- Implemented the **Auto-encoding Variational Bayes** paper using PyTorch framework.
  - Carried out experiments with generations using the MNIST dataset, trying out different loss functions for training. [\[GitHub Link\]](#)
- Dec 2018 **One shot learning using Siamese networks**, [🔗](#).
- Implemented the **Siamese Neural Networks for One Shot Image Recognition** paper using PyTorch framework and carried out experiments on the Omniglot dataset. [\[GitHub Link\]](#)
- Nov 2018 **Classifying Names with Character-level RNN**, [🔗](#).
- Trained a classifier using vanilla RNNs which can classify the nationality of person based on his/her name. [\[GitHub Link\]](#)

---

## Achievements

- 2021 Awarded **Institute Bronze Medal** for securing the **third-highest CGPA** amongst all the graduating students in the **Annual Convocation of IIT Roorkee**.
- 2021 **Department Rank 2** out of 78 students in the IIT Roorkee Computer Science batch of 2021.
- 2019 Represented IIT Roorkee in **Student Academic Conference, Inter IIT Tech Meet 2019**.
- 2017 Secured **All India Rank 402** in **JEE-Advanced** out of 0.2 million candidates.
- 2017 Secured **All India Rank 575** in **JEE-Main** out of 1.2 million candidates.
- 2017 Secured place among **National Top 1%** in **National Standard Examination in Chemistry** and **National Standard Examination in Physics**.
- 2016 Shortlisted for the **Kishore Vaigyanik Protsahan Yojana Fellowship award**.
- 2015 Awarded **National Talent Search Examination Fellowship** by **NCERT** under the HRD ministry, Govt. of India.

---

## Extracurricular Activities

- Apr 2020 - May 2021 **Chair**, IIT Roorkee ACM Student Chapter.
- ACM is the world's largest educational and scientific computing society which delivers resources that advance computing as a science and a profession.
  - Head of the student chapter, responsible for organizing events to promote core computer science fields in IIT Roorkee.
- Apr 2020 - May 2021 **Co-President**, Vision and Language Group.
- VLG aims to foster a deep learning research community within the campus through regular open discussions, workshops and by undertaking various research projects.
  - Responsible for scheduling group activities and managing the administrative front of the group.

Nov 2020 - May 2021 **Student Mentor**, Student Mentorship Program IIT Roorkee.

— Mentoring freshmen for their smooth transition to campus life, motivating their academic and co-curricular endeavors.

---

## Skills

Programming Languages Python, C++, Java.

Software Packages PyTorch, Keras, Tensorflow, Matplotlib, PySpark, Scipy, Numpy, Opencv-python, Jupyterhub, Docker, Git, Linux, Latex.