# Ashutosh Chaubey

✉ achaubey@cs.iitr.ac.in
⌂ www.ashutoshchaubey.in
🎓 Ashutosh Chaubey
in ashutosh-chaubey
○ ac-alpha

## Education

**2017 - 2021**    **Bachelor of Technology**, *Computer Science and Engineering*, Indian Institute of Technology, Roorkee, **CGPA 9.718/10.0** - **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

**2023**    **Meta-Learning Framework for End-to-End Imposter Identification in Unseen Speaker Recognition**, **Ashutosh Chaubey**, Sparsh Sinha, Susmita Ghose.
**[Paper Link]** - To appear in the **IEEE Workshop on Automatic Speech and Understanding (ASRU) 2023**.

**2022**    **Improved Relation Networks for End-to-End Speaker Verification and Identification**, **Ashutosh Chaubey**, Sparsh Sinha, Susmita Ghose.
**[Paper Link] [Poster Link]** - Published in the **Interspeech 2022**.

**2022**    **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] [Patent 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.
**[Paper 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.
**[Paper Link] [Presentation Link] [Poster Link]** - Published in the **5th Asian Conference on Pattern Recognition (ACPR) 2019**.

## Research Experience

**Apr 2023 - Present**    **Founding Team - Data Scientist**, Anoki Inc..
— Worked with contrastive language-audio models for movie shot retrieval using text and audio.
— Working with state-of-the-art text-to-speech and voice cloning technologies to generate AI voice-overs for TV advertisements.

**Jul 2021 - Mar 2023**    **Data Scientist**, LG Ad Solutions (formerly Alphonso Inc.).
— Worked with state-of-the-art speaker verification model RawNet and ECAPA-TDNN to exhibit their generalizability on near-/far-field audios, different languages and under noisy environment.
— Proposed a novel relation network based pipeline for end-to-end speaker recognition.
— Worked on neural fingerprinting for automatic content recognition (ACR) on client TV devices through audio using contrastive learning.
— Worked briefly on voice-based gender and age classification, text-to-speech and neural voice cloning for smart dubbing of video contents.

**May 2020 - Jul 2020**    **Research Intern**, Big-data Experience Lab, Adobe Research.
— Used deep Q learning to learn an optimal acquisition function for active learning by modelling the active learning scenario as 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 human feedback from verification and class imbalance in the acquired samples as additional rewards for the MDP and performed ablation studies for them.

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| May 2019 - Jul 2019 | **Research Intern**, Video Analytics Lab, Indian Institute of Science, Bengaluru.<br>— Worked on multi-person human pose prediction using synthetic dual person dataset.<br>— Due to unavailability of enough real training dataset, developed a pipeline to generate synthetic dual person dataset and their pose annotations.<br>— Also worked on full human body shape prediction to predict the SMPL parameters of a person from single RGB image and performed studies related to camera angles and perspectives. |

## Projects

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| Sep 2020 - Apr 2021 | **Improved Sampling for Active Learning**, *Bachelor Thesis Project*, under Prof. R. Balasubramanian, IIT Roorkee.<br>— Proposed two pipelines for active learning on image classification tasks and demonstrated their effectiveness on MNIST, CIFAR, SVHN and LSUN datasets.<br>— First pipeline proposes a sub-linear sampling strategy which leverages the generator of a generative adversarial network (GAN) to find the optimal sample for acquisition.<br>— Second pipeline relies on the discriminator score of a GAN to find the optimal sample to be labelled in the current active learning cycle. |
| Jan 2020 - Apr 2020 | **Survey on Universal Adversarial Perturbations**, *[Paper Link]*.<br>— Comprehensive survey on attacks and defenses involving universal adversarial perturbations.<br>— Compared existing techniques based on their fooling rates, ease of deployment and amount of data required.<br>— Summarized the extension of universal perturbations to different tasks such as semantic segmentation, depth estimation and image retrieval and discussed future directions in the topic. |
| Jan 2020 - Mar 2020 | **Vehicle Speed Estimation using Deep Neural Networks**, under Prof. Raksha Sharma, IIT Roorkee.<br>— Developed a pipeline for vehicular speed estimation using flow-based CNNs.<br>— Experimented with the trained neural network to understand the model's sensitivity to certain parts of the input by computing gradients with respect to the inputs. |
| Jan 2019 - Apr 2019 | **Automatic Evaluation of Machine Synthesized Speech**, *[Paper Link]*, under Prof. R. Balasubramanian, IIT Roorkee.<br>— Developed an ensemble based technique which uses discriminator from a speech synthesizing GAN to generate "humanness score" of machine synthesized speech.<br>— Proposed a new metric - *Anthropomorphic Score*, free from human intervention, for the evaluation of speech synthesized from *text-to-speech* models.<br>**[Paper Link] [Presentation Link] [Poster Link]** |
| Nov 2018 - Feb 2019 | **Beginner projects on deep learning**.<br>— **Variational Autoencoder for MNIST** - Implemented the *Auto-encoding Variational Bayes* paper using PyTorch framework. **[GitHub Link]**<br>— **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]**<br>— **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

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| 2021 | Awarded **Institute Bronze Medal** for securing the **third-highest CGPA** among over 1000 graduating students in the **Annual Convocation of IIT Roorkee** 2021. |
| 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. |
| 2016 | Awarded **KVPY Fellowship** - highly prestigious national fellowship awarded by Indian Institute of Science and Government of India to students who show talent and aptitude in research **[Link]**. |
| 2015 | Awarded **NTSE Fellowship** by NCERT under the HRD ministry, Government of India - most prestigious scheme for identifying and nurturing talented students in India **[Link]**. |

## Extracurricular Activities

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| Apr 2020 - May 2021 | **Chair**, IIT Roorkee ACM Student Chapter.<br>— ACM is the world's largest educational and scientific computing society which delivers resources that advance computing as a science and a profession.<br>— Head of the student chapter, responsible for organizing events to promote core computer science fields in IIT Roorkee. |

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| Apr 2020 - May 2021 | **Co-President**, Vision and Language Group.<br>— VLG aims to foster a deep learning research community within the campus through regular open discussions, workshops and by undertaking various research projects. **[Link]**<br>— Responsible for scheduling group activities and managing the administrative front of the group. |
| Nov 2020 - May 2021 | **Student Mentor**, Student Mentorship Program IIT Roorkee.<br>— Mentoring freshmen for their smooth transition to campus life, motivating their academic and co-curricular endeavors. |

## References

**Dr. Susmita Ghose**, *Head of Data Science*, Anoki. Inc..
✉ susmita@anoki.tv

**Dr. Lampros Kalampoukas**, *ex - Chief Technology Officer*, LG Ad Solutions.
✉ lamprosk@gmail.com

**Dr. Sumit Shekhar**, *Senior Machine Learning Scientist*, Adobe Research.
✉ sushekha@adobe.com