

# Kulendu Kashyap Chakraborty

## Education

- 2019 - 2023 **GIMT, Assam Science and Technology University, Assam, India.**  
*Bachelor of Technology in Computer Science and Engineering (CSE)*  
Electives: Data Mining, Image Processing, Computational Geometry, Machine Learning, Neural Networks, and Deep Learning, Artificial Intelligence, Speech, and Natural Language Processing

## Experience

- Jan 2022 - **Georgia State University, Atlanta, GA, USA.**  
Nov 2022 *Undergraduate Researcher (Intern)* | Supervised by: [Dr. Ugur Kursuncu](#)
  - Engaged in works that involve the integration of AI for social good and social computation, and often analyzing human behavior on front-line social sources.
  - Studying and Analysing "Extremist" behavior on front-line social media sources.
- May 2021 - **National Institute of Technical Teachers' Training and Research, Kolkata, India.**  
Dec 2021 *Deep learning Research Intern* | Collaborators: [Dr. Kangkana Bora](#), [Dr. Chandan Chakraborty](#)
  - Developed CNN architecture for classifying the leaf disease on potato plants. 97.895% accuracy for fine-tuned VGG-16 CNN architecture on the plant village dataset.
  - Comparative assessment with pre-trained CNN architectures like: VGG-16, VGG-19, ResNet-50, and MobileNet, along with the fine-tuned variant of VGG-16.
- May 2020 - **Azure Skynet, Indian Institute of Technology Hyderabad (IITH).**  
June 2020 *Machine Learning Intern*
  - Developed algorithms and improvised diverse base-line machine learning and computer vision models, such as: classifying and recognizing handwritten characters, with MNIST dataset as the training set and achieving a decent accuracy on the testing set.
  - Received appreciation & honored with a Machine Learning Intern certification.

## Publications

### Journal Papers

- [1] **"Automated recognition of optical image based potato leaf blight diseases using deep learning"**.  
**Kulendu Kashyap Chakraborty**, Rashmi Mukherjee, Chandan Chakraborty, Kangkana Bora  
Physiological and Molecular Plant Pathology, 119 (2022): 101781 [\[Paper\]](#) [\[Journal page\]](#)

### Conference Papers

- [2] **"Semantic Segmentation of Brain Tumor on multi-band 3D volumes using non-uniform 3D U-Nets"**.  
**Kulendu Kashyap Chakraborty**, Bishal Roy, Abhimanyu Kumar, Minakshi Gogoi.  
International Conference on Computer, Electronics and Electrical Engineering and Their Applications (IC2E3 2023) - *Submitted*

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## Open Source Works

- Project **Kitabe**, *Online Book Recommender System*.  
Contributor Project page: <https://github.com/kulendu/Kitabe>
- This Project has been developed under the period of GirlScript Summer of Code (GSSoC), 2021. Improved the Recommendation technique and added more books to the library.
  - Improvising the User-Interface to make it look better and easy to navigate.
- Project **Breast-Cancer-Predictor**, *Web app to predict Breast Cancer using AI techniques*.  
Contributor Project page: <https://github.com/kulendu/Breast-Cancer-Predictor>
- This Project has been developed under the period of GirlScript Summer of Code (GSSoC), 2021. Made improvements in the results of the pre-trained Convolutional Neural Network (CNN) by tuning the hyper-parameters and tweaking some functional parameters.
  - Also improved the accuracy to 0.7% to obtain better results on the SOTA algorithm.

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## Projects

- May 2021 - Present **Semantic Segmentation of Brain Tumor on multi-band 2D stacked volumes using non-uniform 3D U-Nets**, *7<sup>th</sup> semester Academic Project work*.  
Project slides: [Google Slides](#)
- Given a multi-band 3D scan of the brain (preferably MRI scans), the aim is to semantically segment the Tumor from the volumized layers.
  - Using 3D U-Net as the baseline architecture, all the pixels are semantically segmented to produce the masks for the provided MRI input.
  - BraTS 2020 Challenge Data has been selected as the 'Benchmark Data' for analyzing & performing further operations.
- Attention-based variant of U-Net for semantic segmentation of Brain Tumors**, *8<sup>th</sup> semester Academic Project work*.  
**[On-going Project]**
- Proposing a pipeline, which utilizes the multi-view fusion techniques along with performing a comparison analysis with the Attention-based U-Net and the refined U-Net.
  - w/ using image augmentation and bias reduction algorithms as the baseline pre-processing techniques.
- Sept 2021 - Present **Assamese Dataset for NLG/NLU Tasks**, *Dataset collection and web scraping/crawling*.  
Collaborators: [Subrat Kishore Dutta](#), Saarland University, Germany
- Collected some good numbers of text data from heterogeneous genres.
  - Implementing techniques for further aggregating those data into similar genres.
- May 2021 **DrawIt**, *Canvas on screen using Geometrical Computations*.  
Project page: <https://github.com/kulendu/DrawIt>
- DrawIt is a screen on air that allows you to write or draw anything while just waving your fingers over the screen.
  - It uses complex computer-vision-based algorithms for detecting hand gestures and also uses different colors for making it more user-friendly.
- June 2021 **Collusive Website Detection and Analysis**, *NLP and web scrapping*.  
Advised by: [Dr. Hridoy Sankar Dutta](#), University of Cambridge, UK
- Worked on building algorithmic architectures for detecting and analyzing collusive contents on the web.
  - Extracted and grouped the "Topics" from the meta-files using Latent Dirichlet Allocation (LDA) modeling, and also improving the overall accuracy score.
- Aug 2022 **3D Shape Latents**, *3D Shapes and Neural Network*.  
Project Page: [https://github.com/kulendu/3D\\_shape\\_latents](https://github.com/kulendu/3D_shape_latents)
- Inspection and detection of 3D shapes with Efficient Modelling.

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## Technical Skills

- Language Python, Java, C, C++, JavaScript, Java  
Frameworks Tensorflow, PyTorch, Keras, Flask, Django, openCV

Developer Tools Git,  $\LaTeX$ , Google Cloud Platform, VS Code, PyCharm, IntelliJ Idea

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## Positions & Achievements

Sep 2022 **HackZurich.**

- Selected as a participant at [HackZurich](#).

2021 - **Assam Artificial Intelligence Initiative (AII).**

Present ○ Core member and website maintainer [Assam Artificial Intelligence Initiative \(AII\)](#).

2021 **openSUSE Scholarship Recipient.**

- Program (Scholar) recipient for the Cloud-native track. 2021.

Feb 2021 - **Open-Source Contributor at GSSoC'21.**

May 2021 ○ Contributor to a no. of projects being a participant at [GirlScript Summer of Code \(GSSoC\)](#), 2021.

2020 **Bertelsmann Scholarship Recipient.**

- Recipient for the Bertelsmann Scholarship for the Artificial Intelligence Track, 2020.
- Learned about the importance of AI in the industrial sector, and how it contributes to rapid business growth.