Ankan Bhattacharyya

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Education

- **University of Kentucky** — Lexington, KY
  PhD in Computer Science; GPA: 3.8/4.0 — *Aug 2021 - Current*
  Courses: Computer Graphics, Computer Vision, Biomedical Imaging, NLP, Algotirhms, Machine Learning Skills developed: CT Scanning using SKYSCAN 1273, Capturing images using Teledyne FLIR Cameras, Handling damaged artifacts, Designing and printing 3D mounts for the scanners (*Supervisor: Dr. Brent Seales*)
- **West Bengal University of Technology** — West Bengal, India
  Bachelor of Technology in Computer Science and Engineering; GPA: 8.59/10.0 — *Aug 2013 - May 2017*
  Thesis: Recognition of Online Handwritten Bangla Words (Supervisor: Dr. Shibaprasad Sen)

Digital Skills

- **Languages**: Java, C++, Python, C, SQL, Unix scripting
- **Libraries and Framework**: OpenGL, OpenCV, OpenMVG, OpenMVS, Tensorflow, Serverless, PySpin Spinnaeker
- **Tools and Services**: Git, Docker, Singularity, AWS, Autodesk Fusion360, Adobe Lightroom, FIJI, Adobe Premiere Pro, 3D Printer (Bambu Labs)

Experience

- **University of Kentucky** — Lexington, KY
  Graduate Research Assistant — *June 2022 - Current*
  Principal Investigator: Dr. Brent Seales

  Lab: EduceLab
  - **Multispectral Imaging**: Designed a pipeline that takes in multispectral images of damaged pages with having washed out inks, and performs image composition to reveal the contents those are not visible to the naked eyes. Published here
  - **Smithsonian 3D Viewer**: The Smithsonian Institution is the world's largest museum. They have an open-source online 3D viewer, known as the Voyager, to visualize 3D object in the web. I worked on making a pipeline that takes our photogrammetry data, process it in the form that the viewer can show it in the web.
- **University of Kentucky** — Lexington, KY
  Graduate Teaching Assistant — *August 2021 - May 2022*
  Supervisor: Dr. Brent Seales
  - **Computer Graphics and Image Processing**: Designed UI for image morphing, image blurring, interactive games like, minesweeper, flood fill algorithm, baezier curve, spline, and image warping.

  University of KentuckyLexington, KY Graduate Teaching AssistantJanuary 2023 - May 2023

  Supervisor: Dr. Brent Seales
  - **Computer Graphics and Image Processing**: Served as a primary insctructor teaching JAVA and Computer Graphics. The course was CS335.
- **Cognizant Technology Solutions** — West Bengal, India
  AWS/NodeJS Developer — *Sept 2017 - July 2022*
  - **iSearch**: Built a voice enabled, multi-lingual search engine, that helped reduce the number of clicks drastically to a single click, thus increasing hotel booking by a decent amount.
  - **Notification system**: Built new notification framework, that helped emailing and sms opt-in during hotel booking, and implemented in layers, that is used by several different projects being developed by the client.
  - **GDPR**: Implemented GDPR, after being enforced by Europe in 2016, for asking permission to otp-in and out from notifications regarding business offers, etc.
  - **Automated ticketing item**: Automated assignment Service Desk Tickets using NLP to concerned groups for resolution.
- **Jadavpur University** — West Bengal, India
  Machine Learning Intern — *Summer 2016*
  Supervisor: Dr. Ram Sarkar
  - Developed a semi-automatic system for Online Handwritten Text Recognition
  - Studied Language Ground Truth for Bangla Script
  - Segmentation and Recognition of online words into constituent strokes

Publications

- **Ankan Bhattacharyya**, C Seth Parker, W Brent Seales, "Multispectral Imaging of Damaged Sacramental Journal Pages: A Preliminary Study", Proceedings of 4th International Conference on Frontiers in Computing and Systems. COMSYS 2023. Lecture Notes in Networks and Systems, vol 975. Springer, Singapore. (2024) (https://doi.org/10.1201/9781003205326)
- **Ankan Bhattacharyya**, Soumyajit Saha, Shibaprasad Sen, Seyedali Mirjalili, Ram Sarkar, "Deep Feature Selection Using Moth-Flame Optimization for Facial Expression Recognition from Thermal Images", Handbook of Moth-Flame Optimization Algorithm: Variants, Hybrids, Improvements, and Applications (1st ed.). CRC Press. (2022) (https://doi.org/10.1201/9781003205326)
- **Ankan Bhattacharyya**, Rajatsubhra Chakraborty, Soumyajit Saha, Shibaprasad Sen, Ram Sarkar, Kaushik Roy, "A Two-Stage Deep Feature Selection Method for Online Handwritten Bangla and Devanagari Basic Character Recognition", SN Computer Science, Progresses in Image Processing (2022) (https://doi.org/10.1007/s42979-022-01157-2)
- **Ankan Bhattacharyya**, Somnath Chatterjee, Shibaprasad Sen, Aleksandr Sinitca, Dmitrii Kaplun, Ram Sarkar, "A deep learning model for classifying human facial expressions from infrared thermal images", Scientific Reports, Nature (2021) (https://doi.org/10.1038/s41598-021-99998-z)
- Shibaprasad Sen, **Ankan Bhattacharyya**, Ram Sarkar, Kaushik Roy, "BYANJON: A Ground Truth Preparation System for Online Handwritten Bangla Documents", ACM Transactions on Asian and Low-Resource Language Information Processing (2021) (https://doi.org/10.1145/3464379)
- Rajatshubra Chakraborty, Soumyajit Saha, **Ankan Bhattacharyya**, Shibaprasad, Sen, Ram Sarkar, K. Roy, "Recognition of Online Handwritten Bangla and Devanagari Basic Characters: A Transfer Learning Approach", 5th IAPR International Conference on Computer Vision & Image Processing (IAPR CVIP2020) (2020) (https://doi.org/10.1007/978-981-16-1092-9_45)
- Rajatsubhra Chakraborty, Debadrita Mukherjee, **Ankan Bhattacharyya**, Himadri Mukherjee, Monoj Kumar Sur, Shibaprasad Sen, Kaushik Roy, "Online Handwritten Bangla and Devanagari Character Recognition by using CNN: A Deep Learning Concept", IEEE 1st International Conference for Convergence in Engineering (ICCE) (2020) (https://doi.org/10.1109/ICCE50343.2020.9290566)
- Shibaprasad Sen, Mridul Mitra, **Ankan Bhattacharyya**, Ram Sarkar, Friedhelm Schwenker, Kaushik Roy , "Feature Selection for Recognition of Online Handwritten Bangla Characters", Neural Processing Letters (2020) (https://doi.org/10.1007/s11063-019-10010-2)
- Shibaprasad Sen, **Ankan Bhattacharyya**, Kaushik Roy, "The Effect of Using Features Computed from Generated Offline Images for Online Bangla Handwritten Character Recognition", Document Processing Using Machine Learning (2019) (https://doi.org/10.1201/9780429277573)
- Shibaprasad Sen, **Ankan Bhattacharyya**, Mridul Mitra, Kaushik Roy, Sudip Kumar Naskar, Ram Sarkar, "Online Bangla handwritten word recognition using HMM and language model", Neural Computing and Applications (2019) (https://doi.org/10.1007/s00521-019-04518-w)
- Shibaprasad Sen, **Ankan Bhattacharyya**, Pawan Kumar Singh, Ram Sarkar, Kaushik Roy, David Doermann, "Application of structural and topological features to recognize online handwritten Bangla characters", ACM Transactions on Asian and Low-Resource Language Information Processing (2018) (https://doi.org/10.1145/3178457)
- Shibaprasad Sen, **Ankan Bhattacharyya**, Avik Das, Ram Sarkar, Kaushik Roy, "Design of novel feature vector for recognition of online handwritten Bangla basic characters", Proceedings of the First International Conference on Intelligent Computing and Communication (2017) (https://doi.org/10.1007/978-981-10-2035-3_50)

Honors and Awards

- Outstanding Student Paper Award, "A deep learning model for classifying human facial expressions from infrared thermal images"University of Kentucky, Department of Computer Science, April 2022.
- UniPi Merit Scholarship for Master's Degree (Laurea Magistrale) in Computer Science A.Y. 2021/2022 awarded by University of Pisa, Italy (Did not avail)
- Participated in "Young IT Professional Award" (YITPA) organized by Computer Society of India, in 2020.

- Most Valuable Player (MVP) 2019, from Travel & Hospitality, Cognizant for outstanding performance in contributing to the Domain.
- First prize in Ideathon 2018 Hackathon in Cognizant, as a team.
- The Best Project Award by Cognizant, in 2017.