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
  (*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)

Skills

- **Technical**: XMT scan(SKYSCAN 1273), 3D Printing, Image Reconstructions, Structure from Motion, Multi View Stereo, Photogrammetry
- **Languages**: Java, C++, Python, C, SQL, Unix scripting
- **Libraries and Framework**: OpenGL, OpenCV, OpenMVG, OpenMVS, PyTorch
- **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
  - **Film restoration**: Trying to digitally restore damaged photographic films from early 1960s. This is my thesis. The films are scanned and reconstructed as volumes. My thesis approaches two problems. Firstly, I am developing an automated segmentation algorithm to virtually unwrap the film roll. After segmentation, I am developing a machine learning model that can produce print quality image from the X-ray based virtually unwrapped films.
  - **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.
  - **James B. Beam Project**: Developed imaging system with Teledyne FLIR cameras to image rolling barrels in the distillery. Built the whole camera rig from scratch. Deployed the system in a domestic environment. The project was based on studying wood grains from the wood that made the barrels. Eventually these grain direction will help to detect defective barrels and stop leakage of Burboun while aging.
- **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 Kentucky** — Lexington, KY
  Graduate Teaching Assistant — *January 2024 - May 2024*
  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.

- **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 (Recent 4)

- **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)

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.