

# Akash Choudhuri

Address: Department of Computer Science, University of Iowa,  
Iowa City, IA, 52246  
Webpage: soothysay.github.io

Email: akash-choudhuri@uiowa.edu

Mobile: +1-319-259-3021

Github: github.com/Soothysay

## RESEARCH INTERESTS

My primary research interest lies in the intersection of **machine learning** and **deep learning** with applications in the domain of **healthcare**. I have also recently explored the field of **uncertainty quantification using Graph Neural Networks**. My long-term research goal is to develop a scalable and comprehensive framework to predict the risk posed by patients in healthcare settings and propose mitigation strategies. I have a good understanding of **data processing and analytics, deep learning, natural language processing, and statistics**.

## EDUCATION

- **The University of Iowa** Iowa City, USA  
*Doctoral Degree: Computer Science; GPA: 3.68/4.0* January 2022 - Present
- **Institute of Mathematics and Applications** Bhubaneswar, India  
*Master of Science: Mathematics with Data Science; GPA: 8.70/10* July 2019 - July 2021
- **Birla Institute of Technology** Mesra, India  
*Bachelor of Science: Mathematics and Computing; GPA: 8.0/10* July 2016 - June 2019

## TECHNICAL SKILLS

- **Languages:** Python, JAVA, R, C, MATLAB
- **Frameworks:** Scikit, PyTorch, TensorFlow, Keras, Flask, H3, Pyspark, AWS
- **Tools:** GIT, MySQL

## PROFESSIONAL EXPERIENCE

- **Lawrence Livermore National Laboratory** Livermore, USA  
*Intern, Data Science Summer Institute* May 2023 - August 2023
  - **Uncertainty Quantification of Weighted Link Prediction in Graphs (Summer Project):** Researched and Developed a conformal prediction algorithm to compute the uncertainty bounds of link prediction using GCNs at a feature level. I am currently working towards a publication.
  - **Cardiac Electrocardiography using Machine Learning (DSSI Challenge Problem):** Primarily worked on the multi-class classification problem to classify irregular heartbeats from a time series data of heartbeats. Fine-tuned and created different ML Models like XGBoost and a hybrid MLP+Randomforest Classifier algorithm. Created a hybrid model that gave 12% gain in accuracy in the MIT-arrhythmia dataset.
- **Data Sutram** Kolkata, India  
*Data Scientist* July 2021 - December 2021
  - **Optimized Algorithm for Delivery Management Systems:** Created a real-time optimization algorithm to assign orders to delivery executives in last-mile delivery services.
  - **Dynamic Footfall:** Found metrics to compute dynamic footfall of places in India using internet devices ping data.
  - **Improved geo-coding Wrapper:** Created a wrapper method that uses Google APIs to geocode Indian addresses.
- **Solytics Partners** Pune, India  
*Consultant (Data Science)* May 2021 - July 2021
  - **Financial Model Testing:** Worked on validating a Credit Risk Model of the World Bank and performed additional stress testing experiments.
  - **Technical Recruiter:** Was associated with technical recruiting of employees in USA and also conducted campus recruitment process in Indian universities
- **Solytics Partners** Remote  
*Intern (Data Science)* March 2020 - April 2021
  - **Auto ML Model:** Worked on creating various pipelines for creating an Auto ML and Deep Learning platform for credit risk scoring.
  - **Pyspark integration with Keras Models:** Worked on creating Pandas UDFs to customize Neural Networks on Spark.

## CURRENT PROJECTS

- **Heterogeneous Hypergraphs for predicting Healthcare Associated Infection Incidence Rates:** (Work in Progress)  
Creating a hypergraph-based deep learning method to predict levels of disease incidence based on heterogeneous interactions of patients with healthcare entities over time.
- **Uncertainty Quantification for Hyperlink Prediction:** Development and formulation of uncertainty quantification formulation for hyperlink prediction in hypergraphs. This will not just have applications in healthcare but also can be adapted for other domains.

## PUBLICATIONS

---

- **Choudhuri, A. Jang, H., Segre, A.M., Polgreen, P., Jha, K. and Adhikari, B.:** Continually-Adaptive Representation Learning Framework for Time-Sensitive Healthcare Applications, In publication Process, Proceedings of The 32<sup>nd</sup> ACM International Conference on Information and Knowledge Management, 2023.
- **Choudhuri, A.:** "A Hybrid Machine Learning Model for Estimation of Obesity Levels" In Data Management, Analytics and Innovation: Proceedings of ICDMAI 2022, Springer Nature ( [https://doi.org/10.1007/978-981-19-2600-6\\_22](https://doi.org/10.1007/978-981-19-2600-6_22) ) .

## IMPORTANT TALKS

---

- **CDC MIND Group Meeting 2023:** Presented initial motivations about the integration of clinical notes for CDI incidence prediction and CCMI prediction and presented the results of our paper titled "Continually-Adaptive Representation Learning Framework for Time-Sensitive Healthcare Applications".
- **Summer Slam 2023:** Presented initial approach to computing uncertainty bounds for weighted link prediction in graphs at the Summer Slam at Lawrence Livermore National Laboratory.
- **Tutorial Series 49th Annual Conference of the Odisha Mathematical Society, 2020:** Presented an introductory tutorial on using ANNs for credit risk estimation.

## CURRENT SUBMISSIONS AND POSTERS

---

- **Designing Near-Optimal Spatial Vaccine Allocation Strategies:** Poster- MIDAS ANNUAL MEETING Lightning Talk, October 2023.
- **Greedy Strikes Back: Circumventing the Hardness of Vaccine Allocation:** In submission, AAAI 2024.

## ACADEMIC SERVICE

---

- **International workshop on Epidemiology meets Data Mining and Knowledge Discovery (epiDAMIK @ KDD):** Program Committee Member and reviewer of the conference for 2022 and 2023.
- **Informatics in Medicine Unlocked (IMU):** Reviewer for the journal in 2022 and 2023.
- **IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM):** Reviewer for the 2024 edition of the conference.

## HONORS AND AWARDS

---

- **UIOWA CS Department Travel Grant::** Full funding received to present research works in 2023.
- **Focus Areas in Science and Technology Summer Fellowship::** From the Indian Academy of Sciences from May-June, 2019.
- **Summer Research Fellowship::** From the Indian Academy of Sciences from May-July, 2018.
- **Indo-German Spring School on Algorithms and Big Data::** Obtained full scholarship to attend the workshops and discussion sessions in 2020.

## RELEVANT COURSES

---

- **CS: 4980:** Computational Epidemiology
- **DATA: 4750:** Probabilistic Statistical Learning
- **ECE: 5995:** Data Mining
- **CS: 5630:** Cloud Computing Technology
- **CS: 5350:** Design and Analysis of Algorithms
- **ECE: 5995:** Generative AI Tools
- **BIOS: 7600:** Statistical Analysis of Network Data

## REFERENCES

---

- **Bijaya Adhikari::** Assistant Professor, Department of Computer Science, University of Iowa. [bijaya-adhikari@uiowa.edu](mailto:bijaya-adhikari@uiowa.edu)
- **Kishlay Jha::** Assistant Professor, Department of Electrical and Computer Engineering, University of Iowa. [kishlay-jha@uiowa.edu](mailto:kishlay-jha@uiowa.edu)