KAUSTAV BHATTACHARJEE

Post-doc Research Associate, Pacific Northwest National Laboratory (PNNL)

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SUMMARY

Results-oriented researcher with a strong background in Human Computer Interaction, specializing in explainable AI (XAI) and privacy-preserving data visualization. Proven ability to develop and deploy innovative, data-driven solutions that enhance transparency, interpretability, and fairness in AI systems. Research published in leading journals and conferences, including, Computer Graphics Forum, VizSec, The Visual Computer, USEC, HILDA, and ISGT.

EXPERIENCE

Post-doc Research Associate

Pacific Northwest National Laboratory (PNNL)

📅 11/2024 - Present

- Developing an AI-based interactive chat interface to help understand environmental permitting documents.
- Applying data privacy techniques to obfuscate grid feeder models, thus enabling secure and efficient sharing among utility partners.

Doctoral Researcher

NJIT's Intelligible Information Visualization (NiiV) Lab

📅 08/2019 - 11/2024   (~5 years)

- Developed a visual analytics interface to enable incremental recourse planning utilizing ML model explanation methods like SHAP.
- Implemented a privacy-preserving pipeline utilizing a Flask API for efficient triage and disclosure risk analysis of open datasets.
- Created a React and D3.js interface to showcase interpretability of machine learning models such as Random Forest and LambdaMART via sensitivity analysis and feature engineering.
- Utilized Natural Language Processing (NLP) to design a scoring system for assessing dataset utility.
- Enhanced a visual analytics platform to uncover correlations among climate science metrics, models, and variables.

PhD Intern, Visual Analytics for Explainable AI

Pacific Northwest National Laboratory (PNNL)

📅 07/2022 - 05/2024   (~2 years)

- Developed an interactive dashboard to visualize and interpret the impact of key weather parameters on a deep learning model, improving stakeholder understanding and facilitating data-driven decision-making.
- Designed a framework for evaluating model performance under varying conditions, ensuring robustness and reliability for real-world grid applications.
- Built a data-driven analytics system for comparing multiple load forecasting models, facilitating model selection and pattern discovery.

Associate, Cyber Security

PricewaterhouseCoopers Private Limited (PwC)

📅 08/2016 - 08/2019 (~3 years)

- Applied data science techniques to Managed Security Services (MSS) projects within banking, pharmaceuticals, and mining sectors, focusing on anomaly detection and threat analysis across diverse systems including firewalls, antivirus, and servers.
- Served as a Security Information and Event Management (S I E M) Administrator, establishing incident monitoring lifecycles with RSA Archer SecOps module and configuring a malware analysis lab.
- Managed the proprietary Global Threat Intelligence Platform and implemented the Malware Information Sharing Platform (MISP).
- Developed and deployed visualization dashboards for client management using SQL for data processing and various Web Technologies for front-end implementation.

EDUCATION

Ph.D. in Data Science

New Jersey Institute of Technology

📅 08/2019 - 11/2024

🎓 GPA: **3.95**/4.0

B.Tech in Information Technology

West Bengal University of Technology

📅 07/2012 - 08/2016

🎓 GPA: **9.13**/10

SKILLS

Data Science & Machine Learning

- *Programming Languages:* Python (libraries: pandas, numpy, scikit-learn, NLTK, TextBlob, Flair), R, C++, Java
- *Machine Learning & AI:* NLP, Text Analysis, Feature Engineering, Classification, Regression, Clustering, Explainable AI, Reinforcement Learning, Recurrent Neural Networks (RNNs), PyTorch, Tensorflow
- *Data Pipelines & Infrastructure:* HuggingFace Pipelines, Docker, Virtual Machines

Data Analysis & Visualization

- *Data Exploration & Wrangling:* Jupyter Notebooks, A/B Testing
- *Data Visualization:* Tableau, D3.js, Plotly, matplotlib, Dash
- *Statistical Analysis:* Descriptive Statistics, Time Series Analysis, Regression Analysis

Web & API Development

- *Front-End Development:* HTML, CSS, Javascript, React.js, Node.js, Material UI (MUI)
- *Back-End Development:* Flask, REST API
- *Development Tools:* Git, Postman, Heroku

Databases & Cloud Platforms

- *Databases:* MySQL, Postgres, MongoDB, SQLAlchemy
- *Cloud Platforms:* Amazon Web Services (AWS), Google Cloud

Other Skills

- *Web Mining & Automation:* Selenium
- *Big Data Technologies:* Hadoop, MapReduce, Hive
- *Malware Detection:* x64Dbg, Regshot, CEF Explorer
- *Security Monitoring & Incident Management:* ArcSight, Splunk, RSA Archer

PUBLICATIONS

Bhattacharjee, Kaustav, Soumya Kundu, Indrasis Chakraborty, and Aritra Dasgupta. "Forte: An Interactive Visual Analytic Tool for Trust-Augmented Net Load Forecasting." In 2024 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), pp. 1-5. IEEE, 2024.

🔗 https://doi.org/10.1109/ISGT59692.2024.10454191

Developed an interactive visual analytics tool (Forte) to enhance trust in AI-powered net load forecasting by enabling the exploration of the relationships between net load predictions and various input factors.

Yuan, Jun, Kaustav Bhattacharjee, Akm Zahirul Islam, and Aritra Dasgupta. "TRIVEA: Transparent Ranking Interpretation using Visual Explanation of Black-box Algorithmic Rankers." The Visual Computer 40, no. 5 (2024): 3615-3631. `Journal`

🔗 https://doi.org/10.1007/s00371-023-03055-x

Designed TRIVEA, an interactive visualization system leveraging Explainable AI (XAI) techniques like LIME and SHAP to interpret black-box ranking models (e.g., LambdaMART, RankBoost, SVM, RankNet) used in machine learning.

Bhattacharjee, Kaustav, and Aritra Dasgupta. "VALUE: Visual Analytics driven Linked data Utility Evaluation." In Proceedings of the Workshop on Human-In-the-Loop Data Analytics, pp. 1-7. 2023.

🔗 https://dl.acm.org/doi/10.1145/3597465.3605225

Developed VALUE, a human-in-the-loop visual analytics workflow for evaluating the utility of joining open datasets.

Bhattacharjee, Kaustav, and Aritra Dasgupta. "Power to the Data Defenders: Human-Centered Disclosure Risk Calibration of Open Data." 2023 Symposium on Usable Security and Privacy (USEC)(2023).

🔗 https://www.ndss-symposium.org/ndss-paper/auto-draft-352/

Investigated human-centered approaches to mitigate disclosure risks and leakage of sensitive information in open data.

Bhattacharjee, Kaustav, Akm Islam, Jaideep Vaidya, and Aritra Dasgupta. "PRIVEE: A Visual Analytic Workflow for Proactive Privacy Risk Inspection of Open data." In 2022 IEEE Symposium on Visualization for Cyber Security (VizSec), pp. 1-11. IEEE, 2022.

🔗 https://doi.org/10.1109/VizSec56996.2022.9941431

Designed PRIVEE, a visual analytics workflow empowering data defenders to proactively identify and mitigate privacy risks in open data through interactive visualizations.

Bhattacharjee, Kaustav, Min Chen, and Aritra Dasgupta. "Privacy-Preserving Data Visualization: Reflections on the State of the Art and Research Opportunities." In Computer Graphics Forum, vol. 39, no. 3, pp. 675-692. 2020. `Journal`

🔗 https://doi.org/10.1111/cgf.14032

Focused on the systemic analysis of the approaches, methods and techniques used for handling data privacy in visualization. Identified the gaps and the future research opportunities in this area.

PAPER UNDER PUBLICATION

Bhattacharjee, Kaustav, Soumya Kundu, Indrasis Chakraborty, and Aritra Dasgupta. "Who should I trust? A Visual Analytics Approach for Comparing Net Load Forecasting Models." In 2025 IEEE PES Grid Edge Technologies Conference & Exposition (Grid Edge), pp. 1-5. IEEE, 2025.

Developed a visual analytic framework to compare the performance of deep learning-based net load forecasting models with traditional models, aiming to enhance trust in model outcomes for energy planning and grid operations.

HONORS & AWARDS

Won the Best Poster prize at the NYC Privacy Day Spring 2024

Awarded NSF Travel Grant to attend Symposium on Usable Privacy and Security (SOUPS 2023)

Won the Best Presentation Award at NJIT GSA Research Day 2023

Delivered a lightning talk at the Symposium of Usable Privacy and Security (SOUPS) 2023

Awarded Gold medal from Tata Consultancy Services (TCS) for overall performance in both student and co-curricular activity in the year 2016

Received A.P.J Abdul Kalam Techno-Wiz award for excellent contribution to the annual college technical fest Innovación 2015