SRINIWAS PANDEY

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RESEARCH INTERESTS

- Complex Systems
- Social Behavior Dynamics
- Complex Networks
- Computational Social Science
- Artificial Intelligence and Machine Learning

ONGOING PROJECTS

Prediction Market-Based Opinion Truthfulness Rating System Using Collective Intelligence
This project develops an opinion truthfulness rating system leveraging collective intelligence through a prediction market framework. Users evaluate and rate the truthfulness of statements based on their knowledge, with rewards for accuracy and penalties for inaccuracies. Once a consensus or verified score is established, users whose ratings align with the correct assessment receive incentives, while those deviating face penalties, ensuring accountability and reliability in evaluations.

User-Controlled Social Network Dynamics: Linking Micro-Level Settings to Macro Phenomena
This project aims to develop a system to empower users by allowing them to customize their social media experience by selecting preferences such as exposure to novel vs. trending ideas, diverse vs. homophilic content, and radical vs. conventional viewpoints etc. Based on these choices, the system automatically adjusts internal micro-level settings-including content filtering mechanism, network structure, and recommendation mechanisms-to align with user preferences. This approach shifts control from algorithmic curation to user-driven customization, fostering a more intentional and personalized engagement experience. The first step in this project involves analyzing how micro-level settings influence macro-level phenomena, such as opinion diversity, depth of discussions, and perceived innovation.

Neighborhood-Aware Recommendation System: Enhancing Digital Environments Beyond Individual Preferences
This project introduces a community-centered recommendation system that extends beyond individual preferences to optimize the user's surrounding network (neighborhood). Unlike traditional recommendation models, which personalize content solely for an individual, our approach curates recommendations for both the user and their local digital environment. This strategy aims to mitigate echo chambers, ideological extremism, and social fragmentation by fostering diverse viewpoints, balanced discourse, and constructive interactions. By dynamically analyzing network structures and information flow, the system adjusts recommendations to create a more engaging, inclusive, and less polarized digital space—promoting healthier and more adaptive online communities.

EDUCATION

Binghamton University — Binghamton, NY
Ph.D., Systems Science (4/4) — May 2023
Dissertation: *Emergence, Evolution, and Impact of Eccentric Ideas in Society*
Advisor: Prof. Hiroki Sayama

IIIT Jabalpur — Jabalpur, India
M.Tech., Computer Science & Engineering (9.4/10) — June 2015
Thesis: *Out-of-core and In-core Algorithms to Discover Clusters of Arbitrary Shapes, Different Sizes and Varying Densities*
Advisor: Prof. S. K. Mohanty

Uttarakhand Technical University — Dehradun, India
B.Tech., Computer Science & Engineering (70/100) — June 2011

RESEARCH EXPERIENCE

***Graduate Research Assistant**, Binghamton Center of Complex Systems (CoCo), Binghamton University* — May '22 – May '23

- **Analyzed the generation and evolution of ideas within social network environments**, studying how opinions emerge, spread, and interact with prevailing societal conventions. Investigated the extent to which unconventional ideas gain traction and influence discourse, as well as the role of network structure in shaping collective thought.
- **Explored the impact of social recommendation systems on human behavior and opinion dynamics**, examining how algorithm-driven suggestions influence user engagement, belief reinforcement, and ideological shifts. Assessed the potential for filter bubbles, echo chambers, and polarization, while identifying mechanisms that drive diversity in opinion formation and information dissemination.

***Research Fellow**, Computer Science & Engineering IIT Guwahati, India* — July '15-Dec '16

- Developed a toolkit to mine and parse the enormous Wikipedia dumps in an offline environment.

***Research Intern**, High Performance Computing Division, Center for Development of Advanced Computing, India* — *Summer 2016*

- Application of High-performance computing tools like (openMP, CUDA, MPI) in data mining.
- Applied openMP constructs in to efficiently mine Wikipedia dumps.

TEACHING EXPERIENCE

***Lecturer**, School of Computing, Binghamton University* Aug '23 - Present

- **Designed and developed comprehensive syllabi and lecture materials** for graduate-level courses, including **Python and Data Mining, Object-Oriented Design with Design Patterns, Data Analytics for Security, and Introduction to Machine Learning**. Ensured course content aligned with industry standards and academic best practices.
- **Delivered engaging lectures and interactive tutorial sessions**, fostering a hands-on learning environment for classes ranging from **50 to 70 students**. Utilized real-world case studies, coding exercises, and active discussions to enhance student engagement and comprehension.
- **Administered quizzes, exams, and assessments**, conducting detailed evaluations to measure student learning outcomes and provide constructive feedback for improvement.
- **Mentored students on capstone projects, independent studies, and research initiatives**, offering guidance on project design, data analysis, algorithm development, and technical implementation. Supported students in refining their problem-solving skills and producing high-quality academic and technical work.

***Teaching Assistant**, School of Pharmacy and Public health, Binghamton University* Aug '19- May '22

- Conducted **tutorial sessions**, assisted in exam proctoring, facilitated laboratory sessions by guiding students through hands-on exercises, **evaluated assignments** and exams to ensure fair grading, and **provided individualized support** to students to enhance their understanding of course material**.**

***Teaching Assistant**, Systems Science and Industrial Engineering, Binghamton University* Aug '18- May '19

- Designed and delivered **R programming** lectures for the **Computational Tools** course, emphasizing data analysis, statistical computing, and practical applications. In **Enterprise Systems Engineering**, evaluated assignments and exams, and conducted discussion sessions.

***Assistant Professor**, Computer Science & Engineering, Uttarakhand Technical University, India* Dec '17 - July '18

- Delivered undergraduate courses on **Operating Systems, Object-Oriented Programming, and Web Programming**, emphasizing both theoretical foundations and practical applications. Designed and led **workshops and seminars** to deepen student engagement and enhance learning outcomes. Provided **mentorship and technical guidance** for minor and termination projects, supporting students in refining their problem-solving skills, implementing best practices, and overcoming academic and technical challenges.

***Teaching Assistant**, Computer Science and Engineering* July '13- May '15

Indian Institute of Informational Technologies DM, Jabalpur, India

- Designed and conducted interactive laboratory sessions for undergraduate courses on **Introduction to Programming with C** and **Object-Oriented Programming**.

PUBLICATIONS

1. **Sriniwas Pandey** and Hiroki Sayama, Effect of recommending users and opinions on the network connectivity and idea generation process, *Northeast Journal of Complex Systems*, 6(1), Article 1. **Available online** **Preprint**
2. **Sriniwas Pandey**, Yiding Cao, Yingjun Dong, Minjun Kim, Neil G. MacLaren, Shelley D. Dionne, Francis J. Yammarino, and Hiroki Sayama, Generation and influence of eccentric ideas on social networks. *Scientific Reports*, 13, 20433, 2023. **Available online** **Preprint**
3. **Sriniwas Pandey** and Hiroki Sayama, Characterizing controversiality of topics utilizing eccentricity of opinions, *Northeast Journal of Complex Systems,* 5(1), 2, 2023. **Available online**
4. Yiding Cao, Yingjun Dong, Minjun Kim, Neil G. MacLaren, **Sriniwas Pandey**, Shelley D. Dionne, Francis J. Yammarino, and Hiroki Sayama, Visualizing collective idea generation and innovation processes in social networks, *IEEE Transactions on Computational Social Systems*, 10(5), 2234-2243, 2023. **Abstract/PDF** **Preprint**
5. Yiding Cao, Yingjun Dong, Minjun Kim, Neil G. MacLaren, **Sriniwas Pandey**, Shelley D. Dionne, Francis J. Yammarino, and Hiroki Sayama, Effects of network connectivity and functional diversity distribution on human collective ideation, *npj Complexity*, 2, 2, 2025. **Available online**. **Preprint**
6. **Sriniwas Pandey**, Mamta Samal, Sraban Mohanty, An SNN-DBSCAN Based Clustering Algorithm for Big Data. Advanced Computing and Intelligent Engineering. Advances in Intelligent Systems and Computing, vol 1082. Springer, Singapore 2020. **Available online**
7. **Sriniwas Pandey**, Pankaj Kumar Yadav, Mamta Samal, Sraban Mohanty, Nearest Neighbor-Based Clustering Algorithm for Large Data Sets. Advances in Computer Communication and Computational Sciences. Advances in Intelligent Systems and Computing, vol 760. Springer, Singapore 2019. **Available online**

PRESENTATIONS

1. **Sriniwas Pandey** and Hiroki Sayama, Effect of recommending users and opinions on the network connectivity and idea generation process, presented as a talk at *NERCCS 2024: Seventh Northeast Regional Conference on Complex Systems,* March 20-22, 2024, Potsdam, NY.

2. **Sriniwas Pandey** and Hiroki Sayama, Characterizing controversiality of topics utilizing eccentricity of opinions, presented as a talk at *NERCCS 2023: Sixth Northeast Regional Conference on Complex Systems,* March 22-24, 2023, Potsdam, NY.
3. **Sriniwas Pandey** and Hiroki Sayama, Characterizing controversiality of topics utilizing eccentricity of opinions, presented as a talk at *the 2022 Conference on Complex Systems (CCS 2022)*, October 17-21, 2022, Palma de Mallorca, Spain.
4. **Sriniwas Pandey**, Yiding Cao, Yingjun Dong, Minjun Kim, Neil G. MacLaren, Shelley D. Dionne, Francis J. Yammarino, and Hiroki Sayama, Are we fascinated by eccentric ideas?, presented as a poster at *NetSci 2022: International School and Conference on Network Science,* July 11-29, 2022, Shanghai, China / online.
5. **Sriniwas Pandey** and Hiroki Sayama, Dynamics of toxicity in Parler dataset, presented as a poster at *NERCCS 2022: Fifth Northeast Regional Conference on Complex Systems,* March 30-April 1, 2022, Buffalo, NY / online.
6. **Sriniwas Pandey** and Hiroki Sayama, Center or off-center: Eccentric behavior shift of GAB social media users, presented as a talk at *the Don Bosco-Binghamton Big Data Online Conference (DB3D-2021)*, October 19-21, 2021, held online.
7. **Sriniwas Pandey** and Hiroki Sayama, Dynamics of user eccentricity on GAB social media, presented as a talk at *the 2021 Conference on Complex Systems (CCS 2021)*, October 25-29, 2021, Lyon, France / online.
8. **Sriniwas Pandey** and Hiroki Sayama, Analyzing eccentric behavior of GAB social media users, presented as a poster (interactive presentation) at *NERCCS 2021: Fourth Northeast Regional Conference on Complex Systems,* March 31-April 2, 2021, conference held online.

HONORS & AWARDS

- Received 'Career Champion' recognition during the inaugural year of teaching (2023).
- Conference on Complex Systems (CCS) student grant (2022)
- Klir Scholarship for Graduate Excellence in Systems Science, Binghamton University (2020 - 2021)
- Ministry of Human Resource and Development (MHRD), Govt of India Fellowship (2013 - 2015, 2015 - 2016)

ACADEMIC SERVICES

- Faculty Search Committee, Master of Science in Information Systems, Binghamton University — 2023 - 2025
- Organizing Committee: Northeast Regional Conference on Complex Systems (**NERCCS 2025)** — 2024 - 2025
- Editorial Board member, Northeast Journal of Complex Systems (CSS US Northeast Chapter) — 2022 - 2023

- Program Committee: International Conference on Complex Systems Modeling, Analysis & Applications (**IC2SMA2 2025)** 2024 - 2025

Serving as a peer reviewer for various scientific journals and conferences.

PROFESSIONAL AFFILIATIONS

- Complex System Society 2021 - 2023
- Association for Computing Machinery 2024 - 2025

PROFESSIONAL EXPERIENCE

Infosys Limited, Hyderabad, India Feb 2012 - July 2013

- Systems Engineer, JAVA and Android

OTHER SKILLS

- **Technical skills:** Python, R, Java, MATLAB, C/C++, JavaScript etc.
- **Soft Skills:** Mentoring, leadership, public speaking.
- **Languages:** Fluent in written and spoken English and Hindi