

Neeti Pokhriyal, PhD

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Professional Experience

RAND Corporation, DC Information Scientist, Full Engineering & Applied Sciences Department	Oct 2023 - present
National Science Foundation AAAS Science and Technology Policy Fellow National Artificial Intelligence Research Institutes and ExpandAI program Directorate for Computer and Information Science and Engineering	Sept 2022 - Sept 2023
The National Academies of Sciences, Engineering, and Medicine, DC Mirzayan Science and Technology Policy Fellow Committee on National Statistics Project: Toward a Vision for a New Data Infrastructure for Federal Statistics and Social and Economic Research in the 21st Century	Mar 2022 - Aug 2022
Dartmouth College, NH Visiting Scholar, Department of Computer Science (CS)	Oct 2021 - Dec 2023
Postdoc , Department of Computer Science jointly with Prof. Soroush Vosoughi (in CS) and Prof. Benjamin Valentino (in Government)	Oct 2019 - Sept 2021
Associate Affiliate, Irving Institute for Energy and Society	July 2020 - Sept 2021
Inter-American Development Bank, DC External Consultant	Jan 2019 - Oct 2019
University at Buffalo, The State University of New York, NY Graduate Research Assistant, Department of Computer Science & Engineering Center for Unified Biometrics and Sensors	Jan 2014 - Sept 2019
Oak Ridge National Laboratory, Oak Ridge, TN Researcher Associate, Computer Science and Mathematics Division	July 2012 - April 2013
University of California, Riverside, CA Graduate Research and Teaching Assistant, Department of Computer Science	Sept. 2008 - Dec. 2009
Tata Consultancy Services, Mumbai, India Assistant Systems Engineer, Nortel Technology Laboratory.	Sept. 2005 - Oct.2007

Education

PhD , Computer Science & Engineering University at Buffalo, The State University of New York Dissertation Title: Learning from Disparate Data: Applications in Biometrics & Sustainability	Aug 2013 - Sept 2019
Masters, Computer Science University of California, Riverside Thesis Title: Nucleosome Landscape Analysis for Novel Gene Discovery Via Machine Learning	April 2008 - Dec. 2009
Bachelors in Computer Engineering, with Honors Aligarh Muslim University, India	July 2001 – May 2005

Research Leadership

1. Winner of the **RAND National Security Research Division's** Big Call for Ideas, 2024.
Awarded **USD 250,000** from 2024 -2025 to develop trustworthy AI in the National Security context.
2. **Mapping Country-wide Energy Access for the Majority World**
Awarded by: Irving Institute of Energy and Society, Dartmouth College
As **Principal Investigator** for **USD 31,000 (100% share)** from July 2020 - Sept 2021.
Goal: Designing a novel computational model to now-cast energy access for developing countries for policy planning.
3. **Financial Services for the Poor** (OPP1114791)
Funded by: Bill and Melinda Gates Foundation
As **Project Lead**, University at Buffalo, for **USD 20,000 (100% share)** from June 2015 - Dec 2016.
Goal: Building algorithms to map poverty at policy-planning regions using mobile phone and satellite data.
4. **Multi-dimensional poverty mapping from mobile phone data on the OPAL platform**
Funded by: Overseas Development Institute (ODI), UK
As **Senior Personnel** for **USD 15,000 (100% share)** from Feb 2019 - August 2019.
Goal: Building novel algorithms that use mobile phone data in a privacy-preserving manner to map poverty.

Recent Awards

1. **Finalist for the Falling Walls Science Breakthroughs of the Year 2023**,
The Falling Walls Science Summit is a leading international and interdisciplinary forum in Berlin, and I was selected among the 30 finalists in June 2023.
2. **Mirzayan Science and Technology Policy Fellow 2022**, National Academies of Sciences, March 2022.
A highly competitive fellowship (<10% acceptance) that exposes fellows to science policy at the federal level.
3. **Chih Foundation Research and Publication Award, University at Buffalo, NY**, May 2019.
This is a single award of USD 2,500/year given each year for doctoral research related to innovation for the betterment of society at the University at Buffalo, State University of New York.
4. **Doctoral Consortium Scholarship** for AAAI Conference on Artificial Intelligence, Jan 2019.
5. **1st place winner - National Statistics Prize & USD 2,000 prize**, Data for Development (D4D) Challenge International Conference on the Analysis of Mobile Phone Datasets, MIT, 2015.
6. **Finalist**, 3 Minute Thesis (3MT), University at Buffalo, 2019.
7. **Travel Support** to attend International Conference on Computational Sustainability, Cornell 2016.
8. **Dean's Distinguished Fellowship Award** at University of California, Riverside, 2008.

Policy experience

1. **National Science Foundation (NSF)**:
 - (a) I was a fellow at the **NSF's National AI Research Institutes** program. I was part of the leadership team at NSF's, **ExpandAI program**. I coordinated multi-directorate efforts to manage the program and proposals, conduct reviews, and assist in funding decisions and program evaluation.
 - (b) I was a member of the AI/ML R&D Interagency Working Group at the **Networking and Information Technology Research and Development Program (NITRD)**. I assisted the Computer and Information Science and Engineering (CISE) leadership (Prof. Michael Littman) with a policy writing piece on "Strategic vision for AI in implementing the CHIPS and Science Act" and attended several inter-agency meetings on AI/ML strategic priorities.
 - (c) As an **AAAS science and technology policy (STPF)** fellow¹, I have participated in several professional development activities, including program management, program evaluation, policy negotiations across the US government, and stakeholder engagement.

¹The AAAS STP fellowship is a highly competitive 50-year-old program that provides opportunities for scientists to learn first-hand about federal policymaking while using their knowledge and skills to address today's societal challenges.

2. **National Academies of Sciences, Engineering, and Medicine (NASEM):**
 - (a) I worked for the **Committee on National Statistics** on the project titled, "Toward a Vision for a New Data Infrastructure for Federal Statistics and Social and Economic Research in the 21st Century". I contributed to research and policy-relevant aspects of building **sustainable models of data access and sharing using privacy-preserving methodologies**.
 - (b) I assisted in literature reviews for the NASEM report (**Toward a 21st Century National Data Infrastructure: Enhancing Survey Programs by Using Multiple Data Sources, 2023**).
3. As a member of the **Association for Computing Machinery (ACM) US Tech Policy Committee** AI & Algorithms subcommittee, I participate in drafting policy papers and responding to requests for information (RFIs) by federal agencies and legislative members related to AI technologies and their policy implications.

Policy papers

5. *Contributed* to the **Statement on principles for the development and use of systems to detect generative AI content, Association for Computing Machinery Technology Policy Committee (ACM)**, Europe/US Technology Policy Committees, October 2023.
4. *Contributed* to the **Response to Request for Information on National AI priorities by the White House Office of Science and Technology Policy, Association for Computing Machinery Technology Policy Committee (ACM)**, Europe/US Technology Policy Committees, July 2023.
3. *Contributed* to the **Joint Principles for the Development, Deployment, and Use of Generative AI Technologies, Association for Computing Machinery Technology Policy Committee (ACM)**, Europe/US Technology Policy Committees, June 2023.
2. *Contributed* to the **Accessible Technology for All**, Workshop Report, Computing Research Organization, June 2023.
1. Poverty Mapping by Combining Alternate Data with Traditional Data – Challenges and Opportunities, **N. Pokhriyal**, **paper** and **presentation** for the **Expert Group Meeting on the Implementation Of The Third United Nations Decade For The Eradication Of Poverty (2018-2027)**, UN Economic Commission of Africa, Addis Ababa, May 2023 (*Invited*)

Peer-Reviewed Academic Journals

10. **Quantifying participation biases on social media**, **N. Pokhriyal**, B. Valentino, S. Vosoughi, EPJ Data Science, July 2023 (Impact factor: 5.4).
9. **Accurate Intercensal Estimates of Energy Access to Track Sustainable Development Goal 7**, **N. Pokhriyal**, Emmanuel Letouzé, Soroush Vosoughi, EPJ Data Science, 2022 (Impact factor: 5.4).
8. **An interpretable model for real-time tracking of economic indicators**, **N. Pokhriyal**, B. Valentino, S. Vosoughi, Association for Computing Machinery (ACM) Transactions on Data Science, 2021.
7. **Combining disparate data sources for improved poverty prediction and mapping**, **N. Pokhriyal***, D. Jacques*, **Proceedings of the National Academy of Sciences (PNAS)**, 2017. (Impact factor: 12)(* joint authorship)
6. **Estimating and Forecasting Income Poverty and Inequality in Haiti Using Satellite Imagery and Mobile Phone Data**, **N. Pokhriyal**, O. Zambrano, J. Linares, H. Hernández *Working Paper*, Inter-American Development Bank, 2020.
5. **Learning from disparate data: Applications in Biometrics and Sustainability**, **N. Pokhriyal**, PhD thesis, University at Buffalo, State University of New York, 2019.
4. **Learning Discriminative Factorized Subspaces with application to Touchscreen Biometrics**, **N. Pokhriyal**, V. Govindaraju, IEEE Access, 2020. (Impact factor: 4.6)
3. **Cognitive-Biometric Recognition from Language Usage: A Feasibility Study**, **N. Pokhriyal**, I. Nwogu, V. Govindaraju, IEEE Transactions in Information Forensics, 2016. (Impact factor: 6.2)
2. **Analysis of nucleosome positioning landscapes enables gene discovery in the human malaria parasite Plasmodium falciparum**, X. M. Lu, E. M. Bunnik, **N. Pokhriyal**, S. Nasser, S. Lonardi, K. Le Roch, BMC Genomics, 2015. (Impact factor: 3.5)
1. Nucleosome Landscape Analysis for Novel Gene Discovery Via Machine Learning, **N. Pokhriyal**, Masters thesis, University at California, Riverside, 2009.

Peer-reviewed Computer Science Conference Proceedings

9. AI-assisted diplomatic decision-making during crises - challenges and opportunities, **N. Pokhriyal***, Till Koebe*, *Frontiers in Big Data-Cybersecurity and Privacy, Commentary*, 2023 (* joint authorship)
8. Social media data reveals signal for public consumer perceptions, **N. Pokhriyal**, A. Dara, B. Valentino, and S. Vosoughi, *ACM International Conference on AI in Finance 2020*.
7. Multi-view learning from disparate sources for Poverty Mapping, **N. Pokhriyal**, *AAAI Conference on Artificial Intelligence*, 2019.
6. A Computational Approach to Poverty Mapping, **N. Pokhriyal**, V. Govindaraju, *International Conference on Computational Sustainability*, Cornell, 2016.
5. Virtual Network and Poverty Analysis in Senegal, **N. Pokhriyal**, W. Dong, V. Govindaraju, *International Conference on the Analysis of Mobile Phone Datasets*, MIT, 2015
4. A Large-scale Study of Language Usage as a Cognitive Biometric Trait, **N. Pokhriyal**, I. Nwogu, V. Govindaraju, *Elsevier Handbook on Big Data Analytics*, 2015. *Invited*
3. Use of Language as a Cognitive Biometric Trait, **N. Pokhriyal**, I. Nwogu, V. Govindaraju, *IEEE International Joint Conference on Biometrics*, 2014.
2. Novel Gene Discovery in the Human Malaria Parasite using Nucleosome Positioning Data, **N. Pokhriyal**, N. Ponts, E. Harris, K. Le Roch & S. Lonardi, *Intl Conf. on Computational Systems Bioinformatics*, 2010.
1. Anomaly Detection for High Fidelity Core Simulators, **N. Pokhriyal**, U. Mertyurek, A. Godfrey, J. J. Billings, In *Proc. of the American Nuclear Society Annual Meeting*, 2013.

Lightly-reviewed Workshop Proceedings

3. Understanding existential societal problems using a computational lens, **N. Pokhriyal**, *AAAS Annual Meeting*, March 2023 in Washington, DC.
2. Assessing countrywide socio-economic deprivations using auxiliary data sets, **N. Pokhriyal** and S. Vosoughi, *AI for Africa for Sustainable Economic Development Workshop*, *ACM International Conference on AI in Finance 2020*, virtual.
1. Knowledge Discovery from Nuclear Reactor Simulation Data, **N. Pokhriyal**, U. Mertyurek, A. Godfrey, J.J. Billings, *Workshop on Analytics for Cyber-Physical Systems*, *SIAM International Data Mining Conference*, 2013.

Selected Talks and Presentations

15. **AI, SDG, and governance**, National Science Foundation, Africa Working group, September 2023.
14. **Invited for the Expert Group Meeting on The Implementation Of The Third United Nations Decade For The Eradication Of Poverty (2018-2027)**, **UN Economic Commission of Africa**, Addis Ababa, May 2023
13. Understanding existential societal problems using a computational lens, **AAAS Annual Meeting**, March 2023 in Washington, DC
12. AI-assisted diplomatic decision-making during crises, 2023 *AAAI Conference on Artificial Intelligence*, *Workshop on AI & Diplomacy*, February 2023 in Washington, DC.
11. Novel data and methods for predicting and mapping multi-dimensional poverty index, **Invited talk** at the **Oxford Poverty and Human Development Seminar Series**, Human Development Report Office at the United Nations Development Program and the Institute of International Economic Policy at George Washington University, Nov 2021.
10. Estimating poverty, inequality and social deprivations in Haiti via machine learning techniques, National Statistics Office of Haiti, Port-au-Prince and **Inter-American Development Bank**, Washington DC, 2020.
9. Social media data reveals signal for public consumer perceptions, *ACM International Conference on AI in Finance (ICAIF '20)*, 2020.
8. Assessing countrywide socio-economic deprivations using auxiliary data sets, *AI for Africa for Sustainable Economic Development Workshop*, *ACM International Conference on AI in Finance 2020*.
7. Multiple talks on Combining disparate data sources for improved poverty prediction and mapping at National Statistics Office of Senegal, United Nations Development Program (UNDP), UNICEF, Sonatel Telecom, Dakar, Senegal, 2019.

6. Multi-view learning from disparate sources for Poverty Mapping, AAAI Doctoral Consortium, 2019.
5. A Computational Approach to Poverty Mapping, Intl Conf on Computational Sustainability, Cornell, 2016.
4. Virtual Networks and Poverty Analysis, National Statistics Office, Sonatel, Senegal, June and November 2015.
3. Virtual Networks and Poverty Analysis in Senegal, NetMob, MIT, April 2015.
2. Computational Framework for Novel Gene Discovery via Machine Learning, Oak Ridge National Laboratory, Computer Science Research Seminar, February 2012. (Invited)
1. Knowledge Discovery from Nuclear Reactor Simulation Data, International Workshop on Analytics for Cyber-Physical Systems, SIAM International Data Mining Conference, 2013.

Skills and certifications

1. Certificate in **Designing and Building AI Products and Services** MIT Professional Development (6-week intensive course in AI product design, analyzing technical and operational requirements for machine learning methods to build services), August 2023 ([Credentials here](#)).
2. Certificate in Mining Massive Datasets, Stanford Continuing Development Online program, Winter-Spring semester 2012 (transcript provided upon request).

Service

1. [Technical Program Committee](#) for ACM Conference on Computing and Sustainable Societies, 2024.
2. [Quantifying biases on social media](#), Commentary, Dartmouth College, September 2023.
3. Judge at Science Fair of Virginia, March 2023.
4. Mentoring middle school Science Olympiad team at Fairfax County Public Schools, VA (2022-2023).
5. Meeting with Quisqueya University, Haiti, and Inter-American Development Bank in Feb 2020 for a participatory exercise to build technical capacity for mapping poverty and inequality using the environment and mobile phone data.
6. Workshop on using mobile data for poverty projections at National Statistics Office, Senegal, 2019.
7. Invited to [blog](#) on poverty mapping at **the Brookings Institution**.
8. Did a TV Interview for encouraging women to join STEM fields in Buffalo, NY, in Nov 2016.
9. Participated in panel and biometrics STEM outreach event at Niagara Falls High School, NY, in 2016.
10. Protégé in the Women in Computing Mentorship program, Oak Ridge National Laboratory, TN in 2013.

Teaching and Mentoring

Lectures for graduate machine learning seminar, 2014.

Intermediate Data Structures and Algorithms, Fall 2009.

Kshitij Tayal (for a year as a visiting Master's student at UB in 2015, now a Ph.D. student at the University of Minnesota); Saumya Tripathi (for a summer as a visiting undergraduate student, UB, 2016); several MS and Ph.D. students in CS Dept, UB (for semester-long engagements).

Reviewer

Journals: Proceedings of National Academy of Sciences (PNAS), Nature Human Behavior, Nature Communications, Nature Humanities, and Social Sciences Communications, Sociological Methods and Research (SMR), SAGE Journals, Information Technology for Development (Taylor & Francis).

Conferences: International Conference on Biometrics (ICB), Biometrics: Theory, Applications, and Systems (BTAS).

Professional Membership

ACM USTPC (US Technology Policy Committee)

ACM (Association for Computing Machinery)

AAAS (American Association for the Advancement of Science)