Neeti Pokhriyal, PhD
Information Scientist, Full
Engineering & Applied Sciences Department
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About me: I am a computer scientist with expertise in research and policy aspects related to developing responsible AI technologies (RAI). I am leading workstreams in developing, deploying, and operationalizing **RAI for challenging contexts in national security**. I work in developing RAI for **societal wellbeing** tasks and in building an inclusive and resilient **AI workforce**. I am a member of the Association for Computing Machinery's US Tech Policy Committee.

Professional Experience

RAND Corporation, DC   Oct 2023 - present
Information Scientist, Full
Engineering & Applied Sciences Department

National Science Foundation   Sept 2022 - Sept 2023
AAAS Science and Technology Policy Fellow
National Artificial Intelligence Research Institutes and ExpandAI program
Directorate for Computer and Information Science and Engineering

The National Academies of Sciences, Engineering, and Medicine, DC   Mar 2022 - Aug 2022
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

Dartmouth College, NH
Visiting Scholar, Department of Computer Science (CS)   Oct 2021 - Dec 2023
Postdoc, Department of Computer Science (joint with the Government Department)   Oct 2019 - Sept 2021
Associate Affiliate, **Irving Institute for Energy and Society**   July 2020 - Sept 2021

Inter-American Development Bank, DC   Jan 2019 - Oct 2019
External Consultant

University at Buffalo, The State University of New York, NY   Jan 2014 - Sept 2019
Graduate Research Assistant, Department of Computer Science & Engineering
Center for Unified Biometrics and Sensors

Oak Ridge National Laboratory, Oak Ridge, TN   July 2012 - April 2013
Researcher Associate, Computer Science and Mathematics Division

University of California, Riverside, CA   Sept. 2008 - Dec. 2009
Graduate Research and Teaching Assistant, Department of Computer Science

Tata Consultancy Services, Mumbai, India   Sept. 2005 - Oct.2007
Assistant Systems Engineer, Nortel Technology Laboratory

Education

PhD, Computer Science & Engineering
University at Buffalo, The State University of New York
Dissertation Title: Learning from Disparate Data: Applications in Biometrics & Sustainability

Masters, Computer Science
University of California, Riverside
Thesis Title: Nucleosome Landscape Analysis for Novel Gene Discovery Via Machine Learning

Bachelors in Computer Engineering, *with Honors*
Aligarh Muslim University, India

Research Leadership

1. **PI** for **National Security Research Division's** Call for Big Ideas project on ethical AI in Fires mission, 2024.

2. Leading teams and working for multiple **RAND projects in Responsible AI** in 2023-25.

3. **Mapping Country-wide Energy Access for the Majority World using AI models**
   Awarded by: Irving Institute of Energy and Society, Dartmouth College
   As **Principal Investigator** for **USD 31,000 (100% share)** from July 2020 - Sept 2021.

4. **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.

5. **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.

Recent Awards and Fellowships

1. Winner of the **RAND National Security Research Division's** Call for Big Ideas, 2024.

2. **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.

3. American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow[1], 2022-23.

4. **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.

5. **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.

6. **Doctoral Consortium Scholarship** for AAAI Conference on Artificial Intelligence, Jan 2019.

7. **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.

8. **Finalist**, 3 Minute Thesis (3MT), University at Buffalo, 2019.

9. **Travel Support** to attend International Conference on Computational Sustainability, Cornell 2016.

10. **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 STPF fellow, I have participated in several professional development activities, including program management, program evaluation, policy negotiations across the US government, and stakeholder engagement.

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

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[1]The 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.

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.

Peer-Reviewed Journal Publications and RAND Reports

20. Mitigating Risks at the Intersection of Artificial Intelligence and Chemical and Biological Weapons, RAND Project Report, 2024.

19. Applying an Equity Lens to Digital Content Transparency and Global AI Standards, A Najera*, **N Pokhriyal***, A Locker, Thao Liz Nguyen, RAND Perspective, 2024 (* joint authorship)

18. 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)

17. Quantifying participation biases on social media, **N. Pokhriyal**, B. Valentino, S. Vosoughi, EPJ Data Science, July 2023 (Impact factor: 5.4).

16. 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).

15. 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.

14. 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)

13. 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.

12. 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.

11. Learning from disparate data: Applications in Biometrics and Sustainability, **N. Pokhriyal**, PhD thesis, University at Buffalo, State University of New York, 2019.

10. Learning Discriminative Factorized Subspaces with application to Touchscreen Biometrics, **N. Pokhriyal**, V. Govindaraju, IEEE Access, 2020. (Impact factor: 4.6)

9. 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)

8. Multi-view learning from disparate sources for Poverty Mapping, **N. Pokhriyal**, AAAI Conference on Artificial Intelligence, 2019.

7. A Computational Approach to Poverty Mapping, **N. Pokhriyal**, V. Govindaraju, International Conference on Computational Sustainability, Cornell, 2016.

6. Virtual Network and Poverty Analysis in Senegal, **N. Pokhriyal**, W. Dong, V. Govindaraju, International Conference on the Analysis of Mobile Phone Datasets, MIT, 2015

5. 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*

4. Use of Language as a Cognitive Biometric Trait, **N. Pokhriyal**, I. Nwogu, V. Govindaraju, IEEE International Joint Conference on Biometrics, 2014.

3. 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.

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. Nasseri, 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.

Policy papers and RAND Blogs

7. Centers of Excellence Can Support Federal Programs' Mission and Enhance Engagement with Underserved Communities, Neeti Pokhriyal, Daniel Hicks, and Christy Foran, RAND Commentary, 2024.

6. *Contributed* to the Comments to Office of Management and Budget on Privacy Impact Assessments, **Association for Computing Machinery Technology Policy Committee (ACM)**, US Technology Policy Committee, April, 2024.

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*)

Lightly-reviewed Workshop Proceedings

4. Understanding existential societal problems using a computational lens, **N. Pokhriyal**, AAAS Annual Meeting, March 2023 in Washington, DC.

3. 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.

2. 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.

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.

Selected Talks, Presentations and Blogs

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

Kyle Brady, TASP Fellow at RAND, 2024.
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)