

Prateek Verma

PhD. Qualifies for O1 & EB1.

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Seeking opportunities where I can leverage my industrial and academic experience to drive differentiation and innovation. I am a machine learning scientist with cross-functional expertise in chemicals, materials, health, and environment. My key strengths lie in visionary and complex problem solving for the domains listed above, leadership, and research advising.

Education

Georgia Institute of Technology, 2011 – 2015, PhD, Materials Science and Engineering, GPA 4.0/4.0

Indian Institute of Technology Roorkee, 2006 – 2011, BS and MS, Polymer Science and Technology, GPA 8.5/10.0

Experience

Manager, Data Science Core, University of Arkansas, 2023 – present

Arkansas Integrative Metabolic Research Center (AIMRC)

- Evaluation, fine-tuning, and prompt engineering of large (vision) language models (LLMs) using multimodal data
- Building machine learning algorithms focused on medical research
- Serving 50+ researchers with their data science and machine learning needs
- Managing high-performance computing and data-storage servers

Postdoctoral Fellow, University of Arkansas, 2021 – 2023

Nayani, Nakarmi and Wu groups

- Built an end-to-end CNN ML pipeline for scientific images
- Built graph and generative algorithms for molecular discovery and finding functional groups on molecules and macromolecules
- **Applications:** predicting onset of diseases, sensors for bacteria and viruses, drug and molecular design, medical diagnosis

Postdoctoral Fellow, Georgia Institute of Technology, 2018 – 2021

Shofner and Russo groups

- Developed deep learning models for noise detection & signal deconstruction for applications in materials & climate science
- Executive Director for OPALL (Open Polymer Active Learning Laboratory)

Senior Coating Chemist, Kimoto Tech, 2016 – 2018

- Team leader for 5 R&D chemists. Led scale-up and production of 15+ lab-to-market products.
- Developed flexible & protective coatings, conductive coatings, and pressure sensitive adhesives

Skills

Machine Learning – convolutional neural networks, linear regression, image preprocessing, ML pipelines, chemical informatics, vision language models, k-Means clustering, RESNET, logistic regression, large language models, support vector machines, graph neural networks.

Computer languages – Python, MATLAB, PHP, SQL, C/C++, JavaScript.

Computational – Matplotlib, Django, Tensorflow & PyTorch, Pandas, MATLAB, MySQL, RDKit, Numpy, Scikit, BioPython, AWS, LAMMPS.

Chemistry – polyurethane synthesis, thermal & UV curing, LCE synthesis, FR polymerization, silanes & silicones.

Materials – auxetics, structure-property relationships, thermal analysis, polymer processing, characterization, liquid crystals, biopolymers, metamaterials, viscoelasticity, nanotechnology.

Industry – chemical formulations, protective coatings, process development, thermal & UV curing, chemical mixing, scale-up operations, adhesives.

Interpersonal – illustration, research advising, mentoring, teaching, leadership, team building, DEI.

Publications

of 24 total, 18 are published or submitted and 13 are first-author papers. A few of the most recent publications are shown.

Please visit [Google Scholar](#) or [my website](#) for a complete list.

7. **P Verma**, U Nakarmi, K Nayani; A new deep-learning approach for drug-like molecular classification and regression; *Nature Communications* (submitting next); **2024**

6. **P Verma**, E Adeogun, ES Greene, S Dridi, U Nakarmi, et al.; Machine-learning classification of heat-stress in organisms using CNNs; *ACS Sensors* (under review / submitted); **2024**
5. **P Verma**, MH Van, X Wu; Beyond human vision: The role of large vision language models in microscope image analysis; *arXiv* (published); **2024**; (preprint) ([link](#)).
4. MH Van, **P Verma**, X Wu; On large visual language models for medical imaging analysis: an empirical study; *IEEE/ACM CHASE* (published); **2024** ([link](#)).
3. D Ansari, **P Verma**, T Ansari; Promise of machine learning techniques towards retrieving aerosol chemical composition from temporal variations of total PM mass concentrations; *Journal of Research in Atmospheric Science* (published); 5-1; **2023** ([link](#)).
2. X Fang, H Sun, C Wu, ..., **P Verma**, et al.; Ag nanoparticle-thiolated chitosan composite coating reinforced by Ag–S covalent bonds with excellent electromagnetic interference shielding and Joule heating performances; *ACS Applied Materials & Interfaces* (IF=10.4) (published); **2023** ([link](#)).
1. H Sun, X Fang, Z Fang, ..., **P Verma**, et al.; An ultra-sensitive and stretchable strain sensor based on micro-crack structure for motion monitoring; *Micro Nano (Nature)* (IF=8.1) (published); 8 (111); **2022** ([link](#)).

Presentations

of 21 total, five most recent are shown. Speakers are shown in bold. Please visit [my website](#) for a complete list.

5. **P Verma**, MH Van, X Wu; Evaluation of large vision language models on scientific images; Washington DC (USA); **2024** ([link](#)).
4. **P Verma**, E Adeogun, ES Greene, S Dridi, U Nakarmi, et al.; CNN based rapid sensing of heat-stress in organisms; Orlando (USA); **2023** ([link](#)).
3. P Verma, AC Griffin, **ML Shofner**; Pathways to manufacturing mechanical metamaterials by examining auxeticity in nonwoven fiber networks; Atlanta (USA); **2023**; (*Invited talk*) ([link](#)).
2. P Verma, **ML Shofner**, AC Griffin; Pathways to Commodity Mechanical Metamaterials – Auxeticity in Nonwoven Fiber Networks; College Station (USA); **2022**; (*Invited talk*) ([link](#)).
1. P Verma, AC Griffin, **ML Shofner**; Nonwoven textile structures – commodity pathways to auxeticity; Chicago (USA); **2022** ([link](#)).

Service

Research advising – Advised the research of a total of 17 undergraduate and graduate students and industry members.

Mentorship – Served as a mentor for Mentor Jackets, MSE Industry Mentoring and IITR's Alumni Mentorship Program for a total of 18 members.

Teaching – Taught 13+ lectures, labs and workshops.

Scientific Reviewing – Reviewed 20+ manuscripts for 12+ scientific journals.

Research funding – Contributed to the planning, writing, editing and/or review of 7 research funding proposals securing ~\$500,000 in awards.

Honors and awards

(1) Selected for National Institute of General Medical Sciences (NISBRE) Conference Merit Award, U Arkansas (2024); (2) Postdoctoral Fellowship (including USDA \$300,000 grant to PI for my work), U Arkansas (2021 – 2023); (3) 5 year GT MSE mentorship award, Georgia Tech (2021); (4) Invited talk & career counselling for polymer graduates and undergraduates, IIT Roorkee (2020); (5) Executive Director, OPALL (Open Polymer Active Learning Laboratory), Georgia Tech (2019 – 2021); (6) Hightower Fellow, OPALL (Open Polymer Active Learning Laboratory), Georgia Tech (2019 – 2021); (7) Postdoctoral Fellowship, from Renewable Bioresources Institute, Georgia Tech (2018 – 2020); (8) Chairman, Technical Conference, Kimoto Tech (2017); (9) Second prize, poster competition (auxetic conference), Georgia Tech (2014); (10) PhD Fellowship, from Institute of Paper Science and Technology, Georgia Tech (2012 – 2015); (11) Chairman, National Polymer Conference, Cognizance, IIT Roorkee (2009); (12) Merit-based scholarship with tuition waiver, IIT Roorkee (2007 – 2011).

Leadership experience

(1) DEI council representative for research scientists and postdocs in the department, Georgia Tech, (2019 – 2021); (2) Co-launched, Postdoc Chats, series of social and professional development gatherings for postdocs campuswide, Georgia Tech, (2019 – present); (3) Advisor, to graduate and undergraduate members and users, OPALL Polymer Makerspace, Georgia Tech, (2019 – 2022); (4) Team Leader, for 5+ industry research scientists, Kimoto Tech, (2016 – 2018); (5) Co-manager, Polymer Thermal Analysis Lab, Georgia Tech, (2013 – 2015); (6) Student President (elected, Saharanpur Campus), IIT Roorkee, (2008 – 2009); (7) Founder and Team Leader, intranet web development, IIT Roorkee, (2007 – 2010).