ABIGAIL LINDA PRIBISOVA

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EDUCATION

Max Planck Institute for Security and Privacy, Bochum, DE *2026 - 2029*
Doctor of Philosophy in Computer Science
Supervisor: Dr. Cătălin Hriţcu

Max Planck Institute for Software Systems, Saarbrücken, DE *2024 - 2026*
CS@max planck doctoral program

University of Cambridge, Cambridge, UK *2023 - 2024*
Master of Philosophy in Advanced Computer Science
Thesis Title: "Categorical Automata Theory"

University of New Mexico (UNM), Albuquerque, NM, USA *2019 - 2023*
Bachelor of Science in Computer Science, summa cum laude

Technische Universität Dresden, Dresden, DE *2021 - 2022*
Study Abroad: Fall 2021 - Spring 2022

INTERNSHIP EXPERIENCE

UNM Computer Science Department Independent Research August 2022 - May 2023
Supervisor: Dr. Deepak Kapur *Albuquerque, NM, USA*

- Implemented quantifier-free satisfiability and interpolation algorithms for the theory of extensional contiguous arrays with a maxdiff operator.

UNM Moses Biological Computation Lab August 2018 - May 2023
Supervisor: Dr. Melanie Moses *Albuquerque, NM, USA*

- Created an ordinary differential equation model (built using the Python package scipy) to compare with a spatial agent-based model in representing the spread of the SARS-CoV-19 virus and the reaction of immune cells in the lungs.
- Modified robot drop-off behavior using Robot Operating System in C++ and ran tests incorporating TensorFlow convolutional neural networks into physical robots for object classification in dynamic foraging scenarios for the "Swarmathon: The Next Generation" workshop.

Sustainable Research Pathways for High-Performance Computing Program June 2022 - August 2022
Lawrence Berkeley National Laboratory *Virtual*

- Developed a framework for transitioning a discrete *time* simulation of viral spread to a discrete *event* simulation to increase simulation speed.
- Demonstrated above framework on a simplified cellular automaton model of viral spread implemented in Python.

Technische Universität Dresden MOSAIC Research Group October 2021 - March 2022
Research Project *Dresden, Germany*

- Learned the partial differential equation (PDE) representing 2D viral spread through data generated by a SIR cellular automaton (implemented in Python) using a statistical learning framework for the identification of PDEs.

Santa Fe Institute - Undergraduate Complexity Research Program June 2021 - August 2021
Undergraduate Intern *Santa Fe, NM, USA*

- Utilized networks created using the Python package musicntwrk to graphically analyze the underlying modal and tonal musical structures of 28 classical and jazz pieces.

Sandia National Laboratories - Applied Machine Intelligence R&D Group June 2020 - August 2021
Undergraduate Intern *Albuquerque, NM, USA*

- Realized six different machine learning classifiers from scikit-learn for multi-label, multi-class classification, achieving above 95% accuracy for decision trees and fully-connected networks in identifying the port and optical device that produced a given optical spectrum.
- Tuned an auto-regressive generative model using TensorFlow and Keras for anomaly detection in high-resolution industrial components with background noise, achieving 70-80% accuracy.

WORK EXPERIENCE

UNM Computer Science Department January 2020 - December 2020
Course Grader & Lab Instructor *Albuquerque, NM, USA*

- Responsible for teaching weekly lab sections covering Python and MATLAB fundamentals and holding office hours to individually assist students.

New Mexico Academy of Family Physicians June 2019 - August 2020
Chapter Executive Assistant *Albuquerque, NM, USA*

- Skilled in working logistics within chapter management, including registering doctors for monthly conferences and meetings, paying bills, balancing checkbooks, and proof-reading and editing newsletters.

PUBLICATIONS

Pribisova A., … Rivas, E. (2026). A Taxonomy of Predicate Transformer Monads for Specifying Monadic Programs. Under Submission. https://arxiv.org/abs/2610.23604

Andrici C., **Pribisova A.,** … Winterhalter, T. (2026). Misquoted No More: Securely Extracting F* Programs with IO. Proceedings of the ACM on Programming Languages, 10(ICFP), 291. https://doi.org/10.1145/3828689

Sarma R., **Pribisova A.,** … Briscoe, J. (2022). Classification of Intensity Distributions of Transmission Eigenchannels of Disordered Nanophotonic Structures Using Machine Learning. Applied Sciences, 12(13), 6642, https://doi.org/10.3390/app12136642

Moses, ME., Hofmeyr, S., Cannon, JL., Andrews, A., Gridley, R., Hinga, M., Leyba, K., **Pribisova, A.,** … & Forrest, S. (2021). Spatially distributed infection increases viral load in a computational model of SARS-CoV-2 lung infection. PLoS Computational Biology, 17(12), e1009735. https://doi.org/10.1371/journal.pcbi.1009735

Sarma, R., Goldflam, M., Donahue, E., **Pribisova, A.,** … & Briscoe, J. (2021). Artificial Intelligence Assisted Optimization and Prediction of Absorption of Metasurfaces for Hot-Electron Generation. Conference on Lasers and Electro-Optics, JTu3A.106. https://opg.optica.org/abstract.cfm?URI=CLEO_SI-2021-JTu3A.106

Sarma, R., Goldflam, M., Donahue, E., **Pribisova, A.,** … & Briscoe, J. (2020). Optimization and Prediction of Spectral Response of Metasurfaces Using Artificial Intelligence. Crystals, 10(12), 1114. https://doi.org/10.3390/cryst10121114

Potter, KM., Donohoe, B., Greene, B., **Pribisova, A.,** & Donahue, E. (2020). Automatic detection of defects in high reliability as-built parts using x-ray CT. Proceedings Society of Photo-Optical Instrumentation Engineers (SPIE) 11511, Applications of Machine Learning 2020, 115110O. https://doi.org/10.1117/12.2570459

POSTERS

Pribisova, A., Abel Castellanos Joo, J. Contrasting Two Logical Theories for Verifying Formulas Involving Arrays. Poster presented at: UNM 18th Annual Computer Science Student Conference 2023; 2023 Apr 26; Albuquerque, NM.

Pribisova, A., Hofmeyr, S. Modeling Viral Diffusion Using Discrete Event Simulation. Poster presented at: 2023 Exascale Computing Project Annual Meeting; 2023 Jan 17-20; Houston, TX.

Andrews, A., Cannon, J., Forrest, S., Gridley, R., Hinga, M., Hofmeyr, S., Leyba, K., Moses, M., **Pribisova, A.,** Surjadidjaja, V., & Tasnim, H. Validating a Spatial Immune Model of Coronaviruses (SIMCoV) with an Ordinary

Differential Equation Model. Poster presented at: NSF Student Conference on COVID 19 Modeling; 2021 Jan 28-29; Virtual.

Tasnim, H., Greigo, A., **Pribisova, A.,** Vining, W., Fricke, M., Moses, M. Swarmathon: The Next Generation – A Google CSR Workshop for Undergraduate Women in Computer Science. Poster presented at: National Science Foundation National Robotics Initiative Principal Investigators' Meeting; 2020 Feb 27-28; Arlington, VA.

Pribisova, A. Swarmathon: The Next Generation. Poster presented at: UNM Undergraduate Research Opportunity Conference; 2020 Apr 23; Virtual.

SCHOLARSHIPS AND AWARDS

UNM Department of Computer Science Outstanding Senior Award (2023)

Second place in "Poster Presentation" category at UNM 18th Annual Computer Science Student Conference (2023)

Churchill Scholarship Recipient (2022)

UNM Department of Computer Science Outstanding Junior Award (2022)

Barry Goldwater Scholarship Recipient (2021)

UNM Computer Science Advisory Board Undergraduate Representative (2021)

UNM Department of Computer Science Outstanding Sophomore Award (2020)

UNM Regent's Scholarship Recipient - full-ride academic merit scholarship (2019-2023)

UNM School of Engineering Dean's List (2019-2023)

United States Department of Education Presidential Scholar (2019)

VOLUNTEER EXPERIENCE

MPI-SWS Girl's Day April 2025
Presenter *Saarbrücken, Germany*

- Gave a presentation about what it means to be a female student researcher and helped facilitate activities for a group of 20 middle school-aged girls during the planned "Girl's Day" at MPI-SWS.

Lobo Women in Computing October 2022 - May 2023
Vice President *Albuquerque, NM, USA*

- Part of executive board that planned weekly "tea times" and outreach events for women and underrepresented groups in computing.
- Completed required modules and workshops to receive chartership and funding from the university.

Children's Cancer Fund of New Mexico August 2019 - May 2023
Member *Albuquerque, NM, USA*

- Organized and facilitated bonding activities for young adults who survived cancer or were undergoing cancer treatment.
- Gave "Anti-Bullying and Self-Esteem" presentation at local elementary schools and interviewed with local TV stations about the struggles of going through cancer treatment.

Central Church Pathfinder Club August 2018 - July 2021
Deputy Director *Albuquerque, NM, USA*

- Wrote lesson plans and taught eighth-grade class bi-monthly about lifestyle or professional skills according to Pathfinder handbook.
- Coordinated staff and class instructors and prepared agendas for bi-monthly meetings, excursions, and ceremonies.

UNM Society of Women Engineers October 2020 - May 2021
Fundraising Relations Manager & Member *Albuquerque, NM, USA*

- Compiled fundraising packet and conducted outreach to local businesses.
- Attended SWE National and SWE Local Conferences in 2019 to gain skills to empower young girls to pursue STEM.

UNM Pathmakers Mentorship Program August 2020 - May 2021
Mentor *Albuquerque, NM, USA*

- Matched with 10 incoming Honors College students to provide advice about UNM, the Honors College, and internships.

UNM STEM Mentorship Program August 2020 - May 2021
Mentor *Albuquerque, NM, USA*

- Paired with 10 incoming STEM students to provide advice about course selection, internships, and UNM.