

RESEARCH FOCUS *Machine intelligence for reasoning and decision-making under uncertainty.*

EDUCATION	2026	Cornell Tech New York, NY Doctor of Philosophy in Computer Science (anticipated)
	2024	MS in Computer Science, conferred on PhD candidacy GPA 4.0 Areas: AI / ML, Scientific Computing, Applied Probability & Statistics <i>NSF Graduate Research Fellow Presidential Life Science Fellow</i>
	2021	University of Pennsylvania Philadelphia, PA Master of Computer & Information Technology GPA 3.97 <i>Interdisciplinary Innovation Fellow Reproducible Research Fellow</i>
	2016	Smith College Northampton, MA BA Anthropology (Biological, Medical), Environmental Science GPA 3.97 <i>Summa Cum Laude – Top 1% of class Phi Beta Kappa Sigma Xi</i>
EXPERIENCE	03.2026 – 05.2026	Resident, Causal Inference <i>Isaac Newton Institute for Mathematical Sciences Cambridge, UK</i> Invited scholars' residency at the University of Cambridge on the theory and methods of causal inference.
	05.2025 – 08.2025	Research Intern <i>YRIKKA New York, NY</i> <i>PI: Dr. Kia Khezeli.</i> Test-time adaptation and world modeling for abstract, causal, and logical reasoning in large language models. <i>Outcomes: NeurIPS LAW 2025 (spotlight), Amazon Trusted AI (poster).</i>
	05.2024 – 08.2024	Research Intern <i>Microsoft Research (MSR), Machine Intelligence Core Cambridge, UK</i> <i>PI: Dr. Aditya Nori, Dr. Javier González.</i> Methods for the evaluation and elicitation of causal and compositional reasoning in language models. <i>Outcomes: ICML 2025, ICLR 2025, pending patent, 2.3k+ HF downloads.</i>
	05.2022 – 08.2022	Clinical Data Science Intern <i>Boehringer Ingelheim, Biostatistics & Data Sciences Ridgefield, CT</i> <i>PI: Dr. Yi Liu.</i> Internal research on multimodal deep learning for survival analysis in pharmaceutical development.
	08.2021 – Present	PhD Student Researcher <i>Weill Cornell Medicine, Institute of AI for Digital Health New York, NY</i> <i>PI: Dr. Fei Wang.</i> Causal machine learning for computational biomedicine.
		<i>Cornell Tech Computer Science New York, NY</i> <i>PI: Dr. Volodymyr Kuleshov.</i> Deep generative and probabilistic modeling.
		<i>Cornell Tech Operations Research New York, NY</i> <i>PI: Dr. Kyra Gan.</i> Robust and efficient statistical inference, scalable causal discovery, and causal fairness in healthcare.
	05.2020 – 07.2021	Master's Student Researcher <i>University of Pennsylvania Bioengineering Philadelphia, PA</i> <i>PI: Dr. César de la Fuente.</i> New paradigms for ML-based drug discovery. <i>Outcomes: Thesis coined the new field of <i>molecular de-extinction</i>, published in <i>Cell Host & Microbe</i> and covered by <i>NPR</i>, <i>Nature News</i>, and <i>CNN</i>.</i>

LANGUAGES	<i>Proficient:</i> Python; R; L ^A T _E X; shell. <i>Prior experience:</i> Stan; Java; C; MATLAB.	
FRAMEWORKS	PyTorch; NumPy; sklearn; tidyverse; Git; AWS; Slurm-based HPC; ARC-AGI .	
SKILLS & INTERESTS	<p><i>2019 – Present:</i> Probabilistic graphical models; generative models; AI reasoning; world models; neuro-symbolic AI; AI evaluation; causal inference; causal discovery; causal fairness; reinforcement learning; graph theory; applied probability; statistics; logic; computational biomedicine; drug discovery.</p> <p><i>Pre-2019:</i> Molecular genetics, molecular diagnostics, epidemiology.</p>	
SELECT FELLOWSHIPS & AWARDS	2025	Doctoral Fellowship Cornell Tech Digital Life Initiative
	2023	Outstanding Service and Community Award Cornell Tech
	2021	NSF Graduate Research Fellowship US National Science Foundation
	2021	Presidential Life Science Fellowship Cornell University
	2021	Reproducible Research Fellowship OKFN, Alfred P. Sloan Foundation
	2020	Interdisciplinary Innovation Fellowship University of Pennsylvania
	2020	Grace Hopper Celebration Scholarship University of Pennsylvania
SELECT PEER-REVIEWED PUBLICATIONS (GOOGLE SCHOLAR)	2025	ICML Maasch, J ; H \ddot{u} yük, A; Xu, X; Nori A; González J. <i>Compositional Causal Reasoning Evaluation in Language Models</i> . 42 nd International Conference on Machine Learning. [ARXIV] [SLIDES] [WEBSITE] [POSTER]
	2025	ICLR - ORAL - TOP 1.8% H \ddot{u} yük, A; Xu, X; Maasch, J ; et al. <i>Reasoning Elicitation in Language Models via Counterfactual Feedback</i> . 13 th International Conference on Learning Representations. [ARXIV]
	2025	AAAI Maasch, J ; et al. <i>Local Causal Discovery for Structural Evidence of Direct Discrimination</i> . 39 th Annual AAAI Conference on Artificial Intelligence. [ARXIV] [SLIDES] [POSTER]
	2024	NEURIPS Hiremath, S; Maasch, J ; et al. <i>Hybrid Top-Down Global Causal Discovery with Local Search for Linear and Nonlinear Additive Noise Models</i> . 38 th Annual Conference on Neural Information Processing Systems. [ARXIV]
	2024	UAI Maasch, J ; et al. <i>Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs</i> . 40 th Conference on Uncertainty in Artificial Intelligence. [ARXIV] [SLIDES] [POSTER]
	2023	CELL HOST & MICROBE Maasch, J *; Torres, M*; et al. <i>Molecular de-extinction of ancient antimicrobial peptides enabled by machine learning</i> . Cell Host & Microbe. 31. 8. 1260-1274. e6. 2023. *Equal contribution. [CELL]
PEER-REVIEWED WORKSHOP PRESENTATIONS	2025	NEURIPS - SPOTLIGHT Maasch, J ; Kalantari, J; Khezeli, K. <i>CausalARC: Abstract Reasoning with Causal World Models</i> . NeurIPS LAW: Bridging Language, Agent, and World Models. [WORKSHOP] [ARXIV] [WEBSITE]
	2023	NEURIPS Maasch, J ; et al. <i>Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs</i> . NeurIPS Causal Representation Learning Workshop. [WORKSHOP] [ARXIV]
	2023	ICML Maasch, J ; et al. <i>Regularized Data Programming with Automated Bayesian Prior Selection</i> . ICML Workshop on Structured Probabilistic Inference & Generative Modeling. [WORKSHOP] [ARXIV]
UNDER REVIEW & IN PREPARATION	2026	Lawrence, R*; Maasch, J *. <i>Position: Beyond Reasoning Zombies — AI Reasoning Requires Process Validity</i> . Under review. *Equal contr. [WEBSITE]
	2025	Maasch, J ; Neiswanger, W; Kuleshov, V; Ermon, S. <i>Probabilistic Graphical Models: A Concise Tutorial</i> . Invited, under review. [ARXIV] [WEBSITE]
PENDING PATENTS	2024	H \ddot{u} yük, A; Xu, X; Maasch, J ; Nori A; González J. <i>Fine-Tuning Language Models for Reasoning with Counterfactual Feedback</i> . App no: 63/699,777.
INVITED POSTERS	01.26	Amazon AGI Trusted AI Symposium New York, NY [WEBSITE]

INVITED TALKS	<p><i>07.25</i> Microsoft Expo Booth, ICML Vancouver, BC</p> <p><i>04.25</i> Flatiron Institute, Simons Foundation New York, NY [SLIDES]</p> <p><i>03.25</i> Cornell INFO5375: Machine Learning for Health New York, NY [SLIDES]</p> <p><i>10.24</i> INFORMS Annual Meeting Seattle, WA [SLIDES]</p> <p><i>07.24</i> Microsoft Research Machine Intelligence Core Cambridge, UK</p> <p><i>06.24</i> University of Cambridge Statistical Laboratory Cambridge, UK</p> <p><i>04.24</i> 34th Annual POMS Conference Minneapolis, MN [SLIDES]</p>
PROFESSIONAL ACTIVITIES	<p><i>24-25</i> Co-organizer, NYC Learning on Graphs Workshop</p> <p><i>24-25</i> PhD Application Reviewer, Cornell Computer Science Graduate Admissions</p> <p><i>23-25</i> Student leader, Cornell CS PhD Visit Days</p> <p><i>2023</i> Co-developer, Cornell CS 6006: Succeeding in the Graduate Environment</p> <p><i>2023</i> Founder / organizer, Cornell Causal Reading Group</p>
PEER REVIEW	<p><i>AI</i> ICML; UAI; AISTATS; ACL ARR; ICML SPIGM; NeurIPS WiML.</p> <p><i>Bio</i> Communications Biology (Nature Portfolio); Journal of Biomedical Informatics (Elsevier); Bioinformatics (Oxford Academic); ACS Infectious Diseases.</p>