

RESEARCH FOCUS	<i>Machine intelligence for reasoning and decision-making under uncertainty.</i>	
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:</i> NeurIPS LAW 2025 (spotlight) , Amazon Trusted AI (poster) .
	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:</i> ICML 2025 , ICLR 2025 , pending patent, 2.3k+ HF downloads .
	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:</i> Thesis coined the new field of <i>molecular de-extinction</i> , published in Cell Host & Microbe and covered by NPR , Nature News , and CNN .

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	<p>2025 Doctoral Fellowship Cornell Tech Digital Life Initiative</p> <p>2023 Outstanding Service and Community Award Cornell Tech</p> <p>2021 NSF Graduate Research Fellowship US National Science Foundation</p> <p>2021 Presidential Life Science Fellowship Cornell University</p> <p>2021 Reproducible Research Fellowship OKFN, Alfred P. Sloan Foundation</p> <p>2020 Interdisciplinary Innovation Fellowship University of Pennsylvania</p> <p>2020 Grace Hopper Celebration Scholarship University of Pennsylvania</p>	
SELECT PEER-REVIEWED PUBLICATIONS (GOOGLE SCHOLAR)	<p>2025 ICML Maasch, J; Hüyük, A; Xu, X; Nori A; González J. <i>Compositional Causal Reasoning Evaluation in Language Models</i>. 42nd International Conference on Machine Learning. [ARXIV] [SLIDES] [WEBSITE] [POSTER]</p> <p>2025 ICLR - ORAL - TOP 1.8% Hüyük, A; Xu, X; Maasch, J; et al. <i>Reasoning Elicitation in Language Models via Counterfactual Feedback</i>. 13th International Conference on Learning Representations. [ARXIV]</p> <p>2025 AAAI Maasch, J; et al. <i>Local Causal Discovery for Structural Evidence of Direct Discrimination</i>. 39th Annual AAAI Conference on Artificial Intelligence. [ARXIV] [SLIDES] [POSTER]</p> <p>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>. 38th Annual Conference on Neural Information Processing Systems. [ARXIV]</p> <p>2024 UAI Maasch, J; et al. <i>Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs</i>. 40th Conference on Uncertainty in Artificial Intelligence. [ARXIV] [SLIDES] [POSTER]</p> <p>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]</p>	
PEER-REVIEWED WORKSHOP PRESENTATIONS	<p>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]</p> <p>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]</p> <p>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]</p>	
UNDER REVIEW & IN PREPERATION	<p>2026 Lawrence, R*; Maasch, J*. <i>Position: Beyond Reasoning Zombies — AI Reasoning Requires Process Validity</i>. Under review. *Equal contr. [WEBSITE]</p> <p>2025 Maasch, J; Neiswanger, W; Kuleshov, V; Ermon, S. <i>Probabilistic Graphical Models: A Concise Tutorial</i>. Invited, under review. [ARXIV] [WEBSITE]</p>	
PENDING PATENTS	2024 Hüyük, 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	07.25	Microsoft Expo Booth, ICML Vancouver, BC
	04.25	Flatiron Institute , Simons Foundation New York, NY [SLIDES]
	03.25	Cornell INFO5375: Machine Learning for Health New York, NY [SLIDES]
	10.24	INFORMS Annual Meeting Seattle, WA [SLIDES]
	07.24	Microsoft Research Machine Intelligence Core Cambridge, UK
	06.24	University of Cambridge Statistical Laboratory Cambridge, UK
	04.24	34th Annual POMS Conference Minneapolis, MN [SLIDES]
PROFESSIONAL ACTIVITIES	24-25	Co-organizer, NYC Learning on Graphs Workshop
	24-25	PhD Application Reviewer, Cornell Computer Science Graduate Admissions
	23-25	Student leader, Cornell CS PhD Visit Days
	2023	Co-developer, Cornell CS 6006: Succeeding in the Graduate Environment
	2023	Founder / organizer, Cornell Causal Reading Group
PEER REVIEW	<i>AI</i>	ICML; UAI; AISTATS; ACL ARR; ICML SPIGM ; NeurIPS WiML .
	<i>Bio</i>	Communications Biology (Nature Portfolio); Journal of Biomedical Informatics (Elsevier); Bioinformatics (Oxford Academic); ACS Infectious Diseases.