

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

EDUCATION	<i>2026</i>	<b>Cornell Tech   New York, NY</b> Doctor of Philosophy in Computer Science (anticipated)
	<i>2024</i>	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>
	<i>2021</i>	<b>University of Pennsylvania   Philadelphia, PA</b> Master of Computer & Information Technology   GPA 3.97 <i>Interdisciplinary Innovation Fellow   Reproducible Research Fellow</i>
	<i>2016</i>	<b>Smith College   Northampton, MA</b> BA Anthropology (Biological, Medical), Environmental Science   GPA 3.97 <i>Summa Cum Laude – Top 1% of class   Phi Beta Kappa   Sigma Xi</i>
EXPERIENCE	<i>03.2026 – 05.2026</i>	<b>Resident</b> <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.
	<i>05.2025 – 08.2025</i>	<b>Research Intern</b> <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> <a href="#">NeurIPS LAW 2025 (spotlight)</a> , <a href="#">Amazon Trusted AI (poster)</a> .
	<i>05.2024 – 08.2024</i>	<b>Research Intern</b> <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> <a href="#">ICML 2025</a> , <a href="#">ICLR 2025</a> , pending patent, <a href="#">2.3k+ HF downloads</a> .
	<i>05.2022 – 08.2022</i>	<b>Clinical Data Science Intern</b> <i>Boehringer Ingelheim, Biostatistics &amp; Data Sciences   Ridgefield, CT</i> <i>PI: Dr. Yi Liu.</i> Internal research on multimodal deep learning for survival analysis in pharmaceutical development.
	<i>08.2021 – Present</i>	<b>PhD Student Researcher</b> <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.
	<i>05.2020 – 07.2021</i>	<b>Master's Student Researcher</b> <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 <a href="#">Cell Host &amp; Microbe</a> and covered by <a href="#">NPR</a> , <a href="#">Nature News</a> , and <a href="#">CNN</a> .

LANGUAGES	<i>Proficient:</i> Python; R; L <sup>A</sup> T <sub>E</sub> X; shell. <i>Prior experience:</i> Stan; Java; C; MATLAB.	
FRAMEWORKS	PyTorch; NumPy; sklearn; tidyverse; Git; AWS; Slurm-based HPC; <b>ARC-AGI</b> .	
SKILLS & INTERESTS	<p><i>2019 – Present:</i> <b>Probabilistic graphical models</b>; generative models; <b>AI reasoning</b>; <b>world models</b>; neuro-symbolic AI; <b>AI evaluation</b>; causal inference; <b>causal discovery</b>; <b>causal fairness</b>; reinforcement learning; graph theory; applied probability; statistics; logic; <b>computational biomedicine</b>; <b>drug discovery</b>.</p> <p><i>Pre-2019:</i> Molecular genetics, molecular diagnostics, epidemiology.</p>	
SELECT FELLOWSHIPS & AWARDS	2025	Doctoral Fellowship   Cornell Tech <a href="#">Digital Life Initiative</a>
	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 ( <a href="#">GOOGLE SCHOLAR</a> )	2025	<b>ICML</b> <b>Maasch, J</b> ; Hüyük, A; Xu, X; Nori A; González J. <i>Compositional Causal Reasoning Evaluation in Language Models</i> . 42 <sup>nd</sup> International Conference on Machine Learning. <a href="#">[ARXIV]</a> <a href="#">[SLIDES]</a> <a href="#">[WEBSITE]</a> <a href="#">[POSTER]</a>
	2025	<b>ICLR - ORAL - TOP 1.8%</b> Hüyük, A; Xu, X; <b>Maasch, J</b> ; et al. <i>Reasoning Elicitation in Language Models via Counterfactual Feedback</i> . 13 <sup>th</sup> International Conference on Learning Representations. <a href="#">[ARXIV]</a>
	2025	<b>AAAI</b> <b>Maasch, J</b> ; et al. <i>Local Causal Discovery for Structural Evidence of Direct Discrimination</i> . 39 <sup>th</sup> Annual AAAI Conference on Artificial Intelligence. <a href="#">[ARXIV]</a> <a href="#">[SLIDES]</a> <a href="#">[POSTER]</a>
	2024	<b>NEURIPS</b> Hiremath, S; <b>Maasch, J</b> ; et al. <i>Hybrid Top-Down Global Causal Discovery with Local Search for Linear and Nonlinear Additive Noise Models</i> . 38 <sup>th</sup> Annual Conference on Neural Information Processing Systems. <a href="#">[ARXIV]</a>
	2024	<b>UAI</b> <b>Maasch, J</b> ; et al. <i>Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs</i> . 40 <sup>th</sup> Conference on Uncertainty in Artificial Intelligence. <a href="#">[ARXIV]</a> <a href="#">[SLIDES]</a> <a href="#">[POSTER]</a>
	2023	<b>CELL HOST &amp; MICROBE</b> <b>Maasch, J*</b> ; 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. <a href="#">[CELL]</a>
PEER-REVIEWED WORKSHOP PRESENTATIONS	2025	<b>NEURIPS - SPOTLIGHT</b> <b>Maasch, J</b> ; Kalantari, J; Khezeli, K. <i>CausalARC: Abstract Reasoning with Causal World Models</i> . NeurIPS LAW: Bridging Language, Agent, and World Models. <a href="#">[WORKSHOP]</a> <a href="#">[ARXIV]</a> <a href="#">[WEBSITE]</a>
	2023	<b>NEURIPS</b> <b>Maasch, J</b> ; et al. <i>Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs</i> . NeurIPS Causal Representation Learning Workshop. <a href="#">[WORKSHOP]</a> <a href="#">[ARXIV]</a>
	2023	<b>ICML</b> <b>Maasch, J</b> ; et al. <i>Regularized Data Programming with Automated Bayesian Prior Selection</i> . ICML Workshop on Structured Probabilistic Inference & Generative Modeling. <a href="#">[WORKSHOP]</a> <a href="#">[ARXIV]</a>
UNDER REVIEW & IN PREPARATION	2026	Lawrence, R*; <b>Maasch, J*</b> . <i>Position: Beyond Reasoning Zombies — AI Reasoning Requires Process Validity</i> . Under review. *Equal contr. <a href="#">[WEBSITE]</a>
	2025	<b>Maasch, J</b> ; Neiswanger, W; Kuleshov, V; Ermon, S. <i>Probabilistic Graphical Models: A Concise Tutorial</i> . Invited, under review. <a href="#">[ARXIV]</a> <a href="#">[WEBSITE]</a>
PENDING PATENTS	2024	Hüyük, A; Xu, X; <b>Maasch, J</b> ; Nori A; González J. <i>Fine-Tuning Language Models for Reasoning with Counterfactual Feedback</i> . App no: 63/699,777.
INVITED POSTERS	01.26	<a href="#">Amazon AGI Trusted AI Symposium</a>   New York, NY <a href="#">[WEBSITE]</a>

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