

JACQUELINE R. M. A. MAASCH

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EDUCATION

- 2021 – Present | **Cornell Tech**, NY, USA | Doctor of Philosophy in Computer Science
Department of Computer Science | Areas: Artificial Intelligence and Scientific Computing
GPA 4.0/4.0 — **NSF Graduate Research Fellow** — **Presidential Life Science Fellow**
- 2021 | **University of Pennsylvania**, PA, USA | Master of Computer & Information Technology
Department of Computer & Information Science | School of Engineering & Applied Science
GPA 3.97/4.0 — **Interdisciplinary Innovation Fellow** — **Reproducible Research Fellow**
- 2016 | **Smith College**, MA, USA | Bachelor of Arts
Major: Anthropology (Focus: Biological, Medical Anthropology) | Minor: Environmental Science
GPA 3.97/4.0 — **Summa Cum Laude** — **Phi Beta Kappa** — **Sigma Xi**

PROFICIENCIES

- Interests* | Machine learning, causal inference, graphical models, biomedicine, drug development.
- Languages* | *Proficient*: Python; R; \LaTeX . *Prior experience*: Java; C; JavaScript; MATLAB.
- Tools* | PyTorch; TensorFlow; sklearn; tidyverse; Stan; git; high-performance computing.
- Courses* | Generative & Probabilistic Models; Causal ML; Bayesian Analysis; Algorithmic Theory; NLP; Computer Vision; Linear Algebra; Discrete Math; Systems Programming.

GRADUATE RESEARCH EXPERIENCE

- 08.2021 – Present | **PhD Student Researcher, Wang Lab**
Cornell University Dept. of Computer Science, Weill Cornell Medicine, New York, NY, USA
PI: Dr. Fei Wang. Health informatics lab investigating machine learning methods for clinical risk modeling, computational drug discovery, and causal inference for biomedicine.
- 08.2021 – Present | **PhD Student Researcher, Kuleshov Group**
Cornell University Dept. of Computer Science, Cornell Tech, New York, NY, USA
PI: Dr. Volodymyr Kuleshov. Machine learning research group investigating core problems in generative and probabilistic modeling with applications to genomics and biomedicine.
- 05.2022 – 08.2022 | **Clinical Data Science Research Intern**
Boehringer Ingelheim, Global Biostatistics and Data Sciences, Ridgefield, CT, USA
PI: Dr. Yi Liu. Pharmaceutical industry research investigating deep learning methods for survival analysis that combine imaging, clinical, and radiomics data modalities.
- 05.2020 – 07.2021 | **Master's Student Researcher, Machine Biology Group**
University of Pennsylvania Dept. of Bioengineering, Philadelphia, PA, USA
PI: Dr. César de la Fuente. DOD-funded laboratory integrating synthetic biology, machine learning, and molecular dynamics to engineer novel antimicrobials. Engineered ML systems to predict peptide functions and inform deep learning-based *de novo* peptide design.

SELECT FELLOWSHIPS, GRANTS & AWARDS

2023 Cornell Tech Service and Community Award
2021 National Science Foundation Graduate Research Fellowship
2021 Presidential Life Science Fellowship, Cornell University
2020 Reproducible Research Fellowship, Open Knowledge Foundation, Alfred P. Sloan Foundation
2016 Summa Cum Laude (highest honors – 1% of graduating class), Smith College Class of 2016

PRE-PRINTS & WORKSHOP PAPERS

2023 Maasch J, et al. Local Discovery by Partitioning: Polynomial-Time Causal Discovery Around Exposure-Outcome Pairs. *Under review*. [arXiv: 2310.17816](#). Workshop draft: *NeurIPS Causal Representation Learning Workshop*.
2023 Maasch J, et al. Regularized Data Programming with Automated Bayesian Prior Selection. *Under review*. [arXiv: 2210.08677](#). Workshop draft: *ICML Workshop on Structured Probabilistic Inference & Generative Modeling*.
2023 Su C, Hou Y, Xu J, Xu J, Brendel M, Maasch J, et al. Identification of Parkinson PACE subtypes and repurposing treatments through integrative analyses of multimodal clinical progression, neuroimaging, genetic, and transcriptomic data. *Under review*. [medRxiv: 2021.07.18.21260731](#).

PEER-REVIEWED PUBLICATIONS

2023 Maasch J*, Torres M*, et al. Molecular de-extinction of ancient antimicrobial peptides enabled by machine learning. *Cell Host & Microbe* 31. (*Equal contribution.)
2023 Su C, Hou Y, Rajendran S, Maasch J, et al. Biomedical discovery through the integrative biomedical knowledge hub (iBKH). *iScience* 26 (4).
2022 Melo M*, Maasch J*, de la Fuente-Nunez C. *ACS In Focus: Machine Learning for Drug Discovery*. American Chemical Society. [eISBN: 9780841299238](#). (*Equal contribution.)
2021 Melo M*, Maasch J*, de la Fuente-Nunez C. Accelerating antibiotic discovery through artificial intelligence. *Communications Biology* 4(1). (*Equal contribution.)
2021 Palmer N, Maasch J, et al. Molecular dynamics for antimicrobial peptide discovery. *Infection and Immunity* 89(4).
2020 Maasch J, et al. Rectal swabs as an alternative sample collection method to bulk stool for the real-time PCR detection of *Giardia duodenalis*. *Am J of Tropical Medicine and Hygiene* 103(3).
2020 Benjamin-Chung J, Pilotte N, Ercumen A, Grant JR, Maasch J, et al. Comparison of multi-parallel qPCR and double-slide Kato-Katz for detection of soil-transmitted helminth infection among children in rural Bangladesh. *PLOS NTDs* 14(14): e0008087.
2020 Hasegawa M, Pilotte N, Kikuchi M, Means AR, Papaiakevou M, Gonzalez AM, Maasch J, et al. What does soil-transmitted helminth elimination look like? Results from a targeted molecular detection survey in Japan. *Parasites and Vectors* 13(6).
2019 Pilotte N, Maasch J, et al. Targeting a highly repeated embryonic DNA sequence for improved real-time PCR-based detection of *Ascaris* infection in human stool. *PLOS NTDs* 13(7): e0007593.

PROFESSIONAL ACTIVITIES

Referee [Computing] Association for Computational Linguistics (ACL) Rolling Review; ICML Workshop on Structured Probabilistic Inference & Generative Modeling (SPIGM); NeurIPS Women in Machine Learning Workshop (WiML). [Life sciences] Communications Biology (Nature Portfolio); Bioinformatics (Oxford Academic); ACS Infectious Diseases (American Chemical Society).

Patents Pending (2022). Co-Inventors: de la Fuente-Nunez C, Torres M, Melo M, Maasch J. Title: *Identification of antimicrobial peptides*. Docket no: 104377.000299 / 23-10289. Application no: 63/383,761.