

JOSHUA NATHANIEL WILLIAMS

4902 Forbes Ave, GHC 6004, Pittsburgh PA, 15232

jnwillia@andrew.cmu.edu

EDUCATION

Carnegie Mellon University

August 2018 - Present

Degree: Computer Science, Ph.D.

Advisor: Zico Kolter

Hampton University

August 2012 - May 2016

Degree: Mathematics, Bachelor of Science

Summa Cum Laude

SELECTED HONORS AND AWARDS

Ford Foundation Predoctoral Fellowships for Minorities

September 2019 - August 2022

PUBLICATIONS

- 2021 A Bayesian Model of Cash Bail Decisions
Joshua Williams and J Zico Kolter
ACM Conference on Fairness, Accountability, and Transparency (FAccT)
- 2020 A Call for Universities to Develop Requirements for Community Engagement in AI Research
Emily Black*, **Joshua Williams***, Michael A Madaio, and Priya L Donti
Fair & Responsible AI Workshop @ CHI2020
- 2019 Dynamic Modeling and Equilibria in Fair Decision Making
Joshua Williams and J Zico Kolter
NeurIPS 2019 Workshop on Robust AI in Financial Services: Data, Fairness, Explainability, Trustworthiness, and Privacy
- 2019 Characterisation of impaired wound healing in a preclinical model of induced diabetes using wide-field imaging and conventional immunohistochemistry assays
Mayer Saidian, Jonathan RT Lakey, Adrien Ponticorvo, Rebecca Rowland, Melissa Baldado, **Joshua Williams**, Maaikie Pronda, Michael Alexander, Antonio Flores, Li Shiri, et al.
International wound journal
- 2019 Feature characterization of scarring and non-scarring types of alopecia by multiphoton microscopy
Jessica Lin, Inga Saknite, Manuel Valdebran, Mihaela Balu, Griffin Lentsch, **Joshua N Williams**, Karsten Koenig, Bruce J Tromberg, and Natasha Atanaskova Mesinkovska
Lasers in surgery and medicine
- 2018 Visualization of Breast Cancer Metabolism Using Multimodal Nonlinear Optical Microscopy of Cellular Lipids and Redox State
Jue Hou, **Joshua Williams**, Elliot L Botvinick, Eric O Potma, and Bruce J Tromberg
Journal of Cancer research
- 2017 In vivo multiphoton microscopy imaging of pigmentary skin disorders
Mihaela Balu, Griffin Lentsch, **Joshua N Williams**, Inga Saknite, Karsten Koenig, Anand Ganesan, and Bruce J Tromberg
Optical Molecular Probes, Imaging and Drug Delivery

(* Equal Contribution)

POSTER PRESENTATIONS

Dynamic Modeling and Equilibria in Fair Decision Making

NeurIPS 2019 Workshop on Robust AI in Financial Services: Data, Fairness, Explainability, Trustworthiness, and Privacy

SELECTED PROGRAM ORGANIZATION

Workshop: *ICLR 2021 Workshop on Responsible AI*

International Conference on Learning Representations, May 2021

RELEVANT COURSEWORK

Machine Learning: Convex Optimization; Advanced Introduction to Machine Learning; Graduate Artificial Intelligence

Computer Science: Types and Programming Languages; Practical Information and Coding Theory

Graduate Teaching Assistantship (TA): Practical Data Science, Ethics and Policy Issues in Computing

RESEARCH EXPERIENCE

Beckman Laser Institute, University of California, Irvine

July 2016 - July 2018

Post-Baccalaureate; Junior Specialist

- Designed and implemented algorithms for processing, analyzing, and identifying structures within images obtained by multiphoton microscopy

Massachusetts Institute of Technology

Summer 2015

Summer Research Intern

- Worked with the Computer Science and Artificial Intelligence Lab's (CSAIL) "Clinical Decision-Making Group" in order to predict patient mortality from a corpus of medical notes

Northwestern University

Summer 2014

Summer Research Intern

- Developed models of dynamic networks including cascading failures in a power grid and information spread and blockage within a social network

RESEARCH TALKS

Creating Feasible Counterfactual Explanations via Posterior Inference

2021 Research Working Group (Ongoing Work)

A Bayesian Model of Cash Bail Decisions

2021 O'Reilly AI Superstream; Spotlight Talk

A Bayesian Model of Cash Bail Decisions

2021 FAccT: ACM Conference on Fairness, Accountability, and Transparency

Dynamic Modeling and Equilibria in Fair Decision Making

2019 Conference of Ford Fellows

COMMUNITY OUTREACH TALKS

Policing, Data Tech, and Race: the Next Frontier

2021 Pittsburgh Racial Justice Summit

The Real-World Minority Report: A Discussion of Predictive Policing in Pittsburgh

2020 Pittsburgh Racial Justice Summit

OTHER ACTIVITIES

Carnegie Mellon Tech4Society (*Member*)
Providing technical support for local organizations/interests

Spring 2019 - Fall 2021

CMU SCS Dean's PhD Advisory Committee on Anti-Racism (*Member*)
Advising the CMU SCS Dean on university issues and efforts related to Anti-Racism

Summer 2020 - Present

ADDITIONAL INFORMATION

Spoken Languages: English (Native)

Programming Languages: Python (Proficient), Matlab (Proficient), Java (Familiar)

Deep Learning Frameworks: PyTorch (Proficient), Tensorflow (Familiar)