

Colin Pawlowski, Ph.D.

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Summary

- AI/ML researcher with 12+ years of experience. Expertise in Operations Research, Optimization, MLOps, and Multi-modal EHR data.
- Proven research track record with 25+ peer-reviewed publications (1800+ citations) leveraging AI-based methods to analyze healthcare data.
- Experience leading high-functioning teams, preparing materials for FDA regulatory submission, and promoting an active and collaborative research culture.

Education **Massachusetts Institute of Technology**, Cambridge, MA
Ph.D. in Operations Research, June 2019. GPA: 5.0/5.0
Supported by National Science Foundation (NSF) Graduate Research Fellowship.

Yale University, New Haven, CT
B.S. in Mathematics (Intensive), May 2014.
GPA: 3.93/4.00; Magna Cum Laude, Phi Beta Kappa Society.

Industry Experience

2025-present **Anumana**, Cambridge, MA
Director of Data Science

- Leading cross-device validation of ECG-AI models, establishing experimental frameworks to demonstrate cardiograph compatibility, and contributing to FDA regulatory submissions.
- Driving development of AI-based 3D cardiac reconstruction from CT and TEE, and leading delivery of a finite-element simulation capability to predict device-tissue interactions during cath lab procedures.

2019–2025 **Inference**, Cambridge, MA
Director & Head of Data Sciences

- Progressively advanced through roles including Translational Scientist, Data Science Partnerships Lead, Head of Data Sciences, and Director & Head of Data Sciences.
- Led real-world evidence studies and client engagements using large-scale, de-identified EHR data from Mayo Clinic.
- Built and managed a high-performing team of 6 data scientists, leading hiring, mentorship, and technical direction across real-world evidence, NLP, and AI/ML initiatives.
- Led COVID-19 data science initiatives, co-authoring 20+ peer-reviewed publications, including the first US-based RWE study confirming the effectiveness of mRNA COVID-19 vaccines; work cited by the White House, CDC, and WHO.

- 2017**
(Summer) **Wealthfront**, Redwood City, CA
Built a research platform to evaluate financial planning strategies for retirement for an automated investment services firm.
- 2014**
(Summer) **Ancera**, Hartford, CT
Analytics Intern
Developed data collection and analytics tools for biotech startup specializing in rapid microbial testing for food producers.

Research Experience

- 2014–2019** **MIT Operations Research Center**, Cambridge, MA
Research Assistant
- *Thesis*: “Machine Learning for Problems with Missing and Uncertain Data with Applications to Personalized Medicine”, *Research advisor*: Dimitris Bertsimas.
 - Developed algorithms for missing data imputation and robust classification on large-scale EHR and genomic datasets.
 - Co-developed OptImpute, a software package for optimization-based missing data imputation used by AI/ML researchers worldwide.
 - Published 4 papers in top AI/ML journals including: *Machine Learning*, *Journal of Machine Learning Research*, and *INFORMS Journal on Optimization*.
- 2013**
(Summer) **Mount Holyoke College REU**, South Hadley, MA
Undergraduate Researcher
Researched mathematical modeling and epidemiology. Programmed a population-level model for tuberculosis in the USA, with cost analysis for several intervention strategies.
- 2011-2012** **NASA Flight Opportunities Program**, Houston, TX
Microgravity Research Team Leader
Led a team of 6 students to build a prototype of a 3-D cell culture apparatus and tested it aboard NASA’s zero-gravity plane.

Teaching Experience

- 2018** **MIT Sloan School of Management**, Cambridge, MA
Teaching Assistant for PhD course: “Machine Learning via a Modern Optimization Lens” (15.097 – Spring 2018, 15.095 – Fall 2018)
- Taught weekly recitations in the Julia programming language, developed and graded assignments, met with student groups to hone final project ideas.
- 2017-2018** **MIT Sloan School of Management**, Cambridge, MA
Instructor for IAP course: “Computing in Optimization and Statistics” (15.S60 – January 2017, 15.S60 – January 2018)
- Prepared materials and taught live coding workshop on “Statistical Modeling and Machine Learning” in the R programming language.
- 2017**
(Spring) **MIT Sloan School of Management**, Cambridge, MA
Teaching Assistant for MBA course: “The Analytics Edge” (15.071)

- Taught weekly recitations in the R programming language, developed and graded assignments, met with student groups to hone final project ideas.

2015
(Spring)

MIT Sloan School of Management, Cambridge, MA

Teaching Assistant for MBA core course: “Data, Models, and Decisions” (15.060)

- Taught weekly recitations, developed course materials and exams, worked one-on-one with students, graded assignments.

Selected Publications

AI/ML Applications to Multi-modal EHR data

1. **Pawlowski C**, et. al. “SARS-CoV-2 and influenza coinfection throughout the COVID-19 pandemic: an assessment of coinfection rates, cohort characteristics, and clinical outcomes.” PNAS Nexus, 2022 Jul 1.
2. **Pawlowski C**, et. al. “FDA-authorized COVID-19 vaccines are effective per real-world evidence synthesized across a multi-state health system.” Med, 2021 Aug 13.
3. **Pawlowski C**, et. al. “Exploratory analysis of immunization records highlights decreased SARS-CoV-2 rates in individuals with recent non-COVID-19 vaccinations.” Sci Rep., 2021 Feb 26.
4. **Pawlowski C**, et. al. “Inference from longitudinal laboratory tests characterizes temporal evolution of COVID-19-associated coagulopathy (CAC).” eLife, 2020 Aug 17.

AI/ML Method Development

1. Bertsimas D, **Pawlowski C**. “Tensor Completion with Noisy Side Information.” Machine Learning, 2023 Aug 7.
2. Bertsimas D, **Pawlowski C**, Orfanoudaki A. “Imputation of clinical covariates in time series.” Machine Learning, 2020 Nov 10.
3. Bertsimas D, Dunn J, **Pawlowski C**, Zhuo Y. “Robust Classification.” INFORMS Journal on Optimization, 2018 Oct 19.
4. Bertsimas D, **Pawlowski C**, Zhuo Y. “From predictive methods to missing data imputation: an optimization approach.” Journal of Machine Learning Research, 2018 Apr 1.

Complete list of publications: <https://scholar.google.com/citations?hl=en&user=WesfOysAAAAJ>

Patents

1. **Pawlowski C**, et. al. “System to identify size and location information from unstructured inputs.” US Patent App. 18/166,676, 2023.
2. **Pawlowski C**, et. al. “Identifying patient populations vulnerable to viral infection and methods of inducing heterologous immunity in same.” US Patent App. 17/371,555, 2022.

Honors and Awards

2016	athenahealth Hackathon Grand Prize
2015	NSF Graduate Fellowship
2012	Richter Summer Fellowship
2011	NASA Flight Opportunities Program, national research grant
2011	Connecticut Space Grant Consortium Project Grant

Skills

Programming languages: Python, R, Julia, SQL, Bash, JavaScript

Cloud computing: Google Cloud Platform, Amazon Web Services

ML software packages: PyTorch, TensorFlow, Scikit-learn, RandomForest, rpart, XGBoost

Natural language processing: LangChain, spaCy

Image processing: Pyvista, Pymeshlab, VTK, ITKSnap

Other software packages: Pandas, Tidyverse, JuMP

Databases: Spark SQL, MongoDB

High performance computing: Slurm

Other skills: Github, Microsoft Office, LaTeX, Adobe Illustrator