

# 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.

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

## Research Experience

<b>2014–2019</b>	<b>MIT Operations Research Center</b> , Cambridge, MA <i>Research Assistant</i>
	<ul style="list-style-type: none"> <li>• <i>Thesis</i>: “Machine Learning for Problems with Missing and Uncertain Data with Applications to Personalized Medicine”, <i>Research advisor</i>: Dimitris Bertsimas.</li> <li>• Developed algorithms for missing data imputation and robust classification on large-scale EHR and genomic datasets.</li> <li>• Co-developed OptImpute, a software package for optimization-based missing data imputation used by AI/ML researchers worldwide.</li> <li>• Published 4 papers in top AI/ML journals including: <i>Machine Learning</i>, <i>Journal of Machine Learning Research</i>, and <i>INFORMS Journal on Optimization</i>.</li> </ul>
<b>2013</b> (Summer)	<b>Mount Holyoke College REU</b> , South Hadley, MA <i>Undergraduate Researcher</i> Researched mathematical modeling and epidemiology. Programmed a population-level model for tuberculosis in the USA, with cost analysis for several intervention strategies.
<b>2011-2012</b>	<b>NASA Flight Opportunities Program</b> , Houston, TX <i>Microgravity Research Team Leader</i> 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

<b>2018</b>	<b>MIT Sloan School of Management</b> , Cambridge, MA <i>Teaching Assistant</i> for PhD course: “Machine Learning via a Modern Optimization Lens” (15.097 – Spring 2018, 15.095 – Fall 2018)
	<ul style="list-style-type: none"> <li>• Taught weekly recitations in the Julia programming language, developed and graded assignments, met with student groups to hone final project ideas.</li> </ul>
<b>2017-2018</b>	<b>MIT Sloan School of Management</b> , Cambridge, MA <i>Instructor</i> for IAP course: “Computing in Optimization and Statistics” (15.S60 – January 2017, 15.S60 – January 2018)
	<ul style="list-style-type: none"> <li>• Prepared materials and taught live coding workshop on “Statistical Modeling and Machine Learning” in the R programming language.</li> </ul>
<b>2017</b> (Spring)	<b>MIT Sloan School of Management</b> , Cambridge, MA <i>Teaching Assistant</i> 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.

<b>2015</b> (Spring)	<b>MIT Sloan School of Management</b> , Cambridge, MA <i>Teaching Assistant</i> 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

<b>2016</b>	athenahealth Hackathon Grand Prize
<b>2015</b>	NSF Graduate Fellowship
<b>2012</b>	Richter Summer Fellowship
<b>2011</b>	NASA Flight Opportunities Program, national research grant
<b>2011</b>	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