

# Colin Pawlowski, Ph.D.

East Arcade, One Main Street, Cambridge, MA 02142  
colin@nference.net | 910-617-9317

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## Summary

- Data scientist and AI/ML researcher with expertise in electronic health record (EHR) data, large language models (LLMs), deep learning, and real-world evidence (RWE) studies.
- Proven research track record with 20+ peer-reviewed publications (1250+ citations) leveraging AI-based methods to analyze healthcare data.
- Experience leading high-functioning teams, promoting an active and collaborative research culture, and driving projects to completion.

**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.

## Experience

**2020-2023**     **nference**, Cambridge, MA  
(Nov-present) *Director & Head of Data Sciences*  
Leading data science research projects at nference and client engagements with biopharma partners. Directly supervised a team of 6 data scientists which conducted 15+ research studies on COVID-19, including the first RWE study confirming the effectiveness of mRNA COVID-19 vaccines in a US-based health system. Work cited by multiple government agencies and organizations including the White House, CDC, and WHO.

**2020**     **nference**, Cambridge, MA  
(Jul-Nov) *Head of Data Sciences*  
Led COVID-19 data science research projects at nference. Conducted RWE studies on EHR data from the Mayo Clinic. First author on 4 publications, including one featured in the NYTimes.

**2020**     **nference**, Cambridge, MA  
(Jan-Jun) *Data Science Partnerships Lead*  
Contributed to the development of DeepModelBuilder, an nferX NLP software platform. Led client engagements to enable use of the nferX AI platform in research and product development-related projects at life sciences organizations.

**2019**     **nference**, Cambridge, MA  
(Jul-Dec) *Translational Scientist*  
Trained NLP models to extract information from unstructured biomedical text.

- 2014–2019**     **MIT Operations Research Center**, Cambridge, MA  
*Research Assistant*  
 Developed fast machine learning algorithms to perform statistical inference on healthcare datasets with missing and uncertain values. Worked on applications in personalized medicine using large-scale EHR and genomic data. Research advisor: Dimitris Bertsimas.
- 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; built a prototype of a 3-D cell culture apparatus and tested it aboard NASA's zero-gravity plane.

## Selected Publications

1. Bertsimas D, **Pawlowski C**. "Tensor Completion with Noisy Side Information." *To appear in Machine Learning*, 2023.
2. Silvert E, Hester L, Ramudu E, **Pawlowski C**, et. al. "Identifying signs and symptoms of AL amyloidosis in electronic health records using natural language processing, diagnosis codes, and manually abstracted registry data." *American Journal of Hematology*, 2023 July 4.
3. Ip W, **Pawlowski C**, et. al. "Augmented curation of disease diagnoses and medications for patients with hepatocellular carcinoma." *ASCO Meeting Abstract*, 2023 May 31.
4. Venkatakrishnan AJ, Anand P, Lenehan P, Ghosh P, Suratekar R, Silvert E, **Pawlowski C**, et. al. "Expanding repertoire of SARS-CoV-2 deletion mutations contributes to evolution of highly transmissible variants." *Scientific Reports*, 2023 Jan 5.
5. **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.
6. Puranik A, Lenehan P, O'Horo JC, **Pawlowski C**, et. al. "Durability analysis of the highly effective BNT162b2 vaccine against COVID-19." *PNAS Nexus*, 2022 Jul 1.
7. Niesen M, **Pawlowski C**, et. al. "Surveillance of Safety of 3 Doses of COVID-19 mRNA Vaccination Using Electronic Health Records." *JAMA Network Open*, 2022 Apr 1.
8. Razonable R, **Pawlowski C**, et. al. "Casirivimab-Imdevimab treatment is associated with reduced rates of hospitalization among high-risk patients with mild to moderate coronavirus disease-19." *EClinicalMedicine*, 2021 Oct 1.
9. Ganesh R, **Pawlowski C**, et. al. "Intravenous bamlanivimab use associates with reduced hospitalization in high-risk patients with mild to moderate COVID-19." *Journal of Clinical Investigation*, 2021 Oct 1.
10. Donadio G, Choudhary M, Lindemer E, **Pawlowski C**, Soundararajan V. "Counties with Lower Insurance Coverage and Housing Problems Are Associated with Both Slower Vaccine Rollout and Higher COVID-19 Incidence." *Vaccines*, 2021 Aug 31.
11. **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.
12. Venkatakrishnan A, **Pawlowski C**, et. al. "Mapping each pre-existing condition's association to short-term and long-term COVID-19 complications." *NPJ Digital Medicine*, 2021 Jul 27.

13. **Pawlowski C**, et. al. "Cerebral Venous Sinus Thrombosis is not Significantly Linked to COVID-19 Vaccines or Non-COVID Vaccines in a Large Multi-State Health System." *Journal of Stroke and Cerebrovascular Diseases*, 2021 Jun 16.
14. **Pawlowski C**, et. al. "Enoxaparin is associated with lower rates of mortality than unfractionated Heparin in hospitalized COVID-19 patients." *EClinicalMedicine*, 2021 Mar 9.
15. Kirkup C, **Pawlowski C**, et. al. "Healthcare disparities among anticoagulation therapies for severe COVID-19 patients in the multi-site VIRUS registry." *J Med Virol.*, 2021 Mar 5.
16. **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.
17. **Pawlowski C**, et. al. "Inference from longitudinal laboratory tests characterizes temporal evolution of COVID-19-associated coagulopathy (CAC)." *eLife*, 2020 Aug 17.
18. Bertsimas D, **Pawlowski C**, Orfanoudaki A. "Imputation of clinical covariates in time series." *Machine Learning*, 2020 Nov 10.
19. Bertsimas D, Dunn J, **Pawlowski C**, Zhuo Y. "Robust Classification." *INFORMS Journal on Optimization*, 2018 Oct 19.
20. 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." *Submitted to US Patent and Trademark Office*, 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, JavaScript, MongoDB, SQL, Bash

*Software packages:* DeepSpeed, LangChain, MatchIt, OpenAI, PyTorch, React, Scikit-learn, spaCy, TensorFlow, Tidiverse, XGBoost

*Project management:* Jira, Confluence

*Other skills:* Adobe Illustrator, Github Co-pilot