Brian Chang MD,PhD

Clinical Data & AI Scientist | Informaticist

Portfolio
LinkedIn
GitHub
Google Scholar

A medical doctor turned data scientist and informaticist, I have 10+ years of experience in clinical medicine and cutting-edge clinical AI development using real-world data for predictive modeling and patient phenotyping. My expertise spans the end-to-end AI/ML lifecycle, from designing scalable data pipelines to model development and deployment, including generative AI and large language models (LLMs). I am passionate about leveraging data to improve healthcare outcomes.

Education

PhD –Biomedical Informatics | Data Science Specialization
Sept 2020 – March 2025
University of Washington – Seattle WA

Master's of Science - Biomedical Informatics
July 2019 – June 2020
NYU Grossman School of Medicine – New York, NY

Doctor of Medicine
Aug 2014 – May 2018
Rutgers New Jersey Medical School – Newark, NJ

Bachelor of Arts - Biology | Business Minor
Sept 2010 – Dec 2013
New York University – New York, NY

Awards

Biomedical Informatics & Data Science Pre-Doctoral Fellowship
National Library of Medicine T15 Grant | Sep 2020
Full tuition waiver and stipend, ~40 new slots/year

Top Scholar Top Off Award
University of Washington | Sep 2020
One-time scholarship to top 2 recruits/year in the BIME program

Fall 2013 Rudin Internship Scholarship
New York University College of Arts & Science | Sep 2013
Awarded for internships with substantive academic content

Select Skills & Tools

Artificial Intelligence | Gen AI | Machine Learning (ML) | Large Language Models (LLM) | Data Strategy | Data Quality | Data Mining | Biostatistics | Natural Language Processing | Computer Vision | Ontologies | Python | SQL | Git | Docker | Software Engineering Best Practices | MLOps | Unix | PySpark | PyTorch | Keras | TensorFlow | Palantir Foundry | Vellum AI | AWS SageMaker | AWS Bedrock | Data Visualization | Clinical Medicine | Electronic Health Records | Oral & Written Communication

Certifications

Epic Systems
- Notecraft for Physicians CLN145
- Physician Builder (Basic) CLN150
- Physician Builder (Analytics) CLN171

Leadership Experience

University of Washington School of Medicine
Department of Biomedical Informatics and Medical Education
Admissions Committee, Student Member
Oct 2022 – Jan 2023
- Reviewed applications for PhD and master's prospective candidates
- Convened with faculty to select candidates to interview
- Interviewed selected candidates with faculty

Select Work & Medical Research History

Oct 2025 – Present
Senior Machine Learning Engineer
Accompany Health – Bethesda, MD (Remote)
- Designed a framework to summarize clinical evidence for hierarchical condition categories (HCCs) for clinical operations teams to decrease manual documentation review

May 2025 – Oct 2025
Machine Learning Engineer
Accompany Health – Bethesda, MD (Remote)
- Designed and developed Retrieval-Augmented Generation (RAG) pipelines in Vellum AI, deployed as bots to assist healthcare providers, optimizing clinical workflows and decreasing time spent on manual policy and evidence-based guidelines review by 40%
- Implemented best practices for prompt engineering and optimization techniques, including chain-of-thought, to decrease inference time by 30%, enhancing clinical decision support
- Implemented and deployed internal versions of LLM-as-a-judge custom metrics to evaluate RAG pipelines for performance and trustworthiness
  Collaborated cross-functionally with product and operations teams to align use cases and required infrastructure for **RAG pipeline deployment**, fostering effective clinical solution integration

Sep 2023 – March 2025
Graduate Research Assistant
University of Washington – Seattle, WA
- Designed and implemented a scalable data engineering pipeline in Palantir Foundry, enabling efficient processing of 100,000+ US residential addresses for health data standardization, data governance, and data privacy
- Adhered to **OMOP Common Data Model** to ensure cross-study consistency and data compatibility, contributing to dataset interoperability and quality in clinical research
- Generated a benchmark dataset from Homeland Infrastructure Foundation-Level Data, facilitating comparative analysis
  Conducted comprehensive literature reviews on geocoding techniques and standards, providing actionable insights for improved algorithm selection and data linkage in healthcare contexts

Sep 2020 – Sep 2023
National Library of Medicine Biomedical Informatics & Data Science Pre-Doctoral Fellow
University of Washington | Department of Biomedical Informatics & Medical Education – Seattle, WA
- Developed multimodal models leveraging structured clinical data (EHR/EMR), natural language processing, and imaging analysis to predict vertebral compression fractures, providing potential clinical decision support
- Collaboratively developed an automated opportunistic screening pipeline to detect vertebral compression fractures on lateral radiographs of the spine, demonstrating end-to-end AI/ML solution development
- Collaboratively developed ensemble method of segmentation models for above pipeline using both CNN- and ResNet-based architectures
- Fine-tuned Segment Anything 2 for above pipeline achieving a 20% increase in PPV for fracture detection, demonstrating expertise in model refinement and measurable impact

Peer-Reviewed Journal Articles

2024

- **Chang BC**, Renslo J, Dong Q, Johnston SK, Perry J, Haynor DR, et al. Using an Ensemble of Segmentation Methods to Detect Vertebral Bodies on Radiographs. American Journal of Neuroradiology. 2024 Oct 1;45(10):1512–20.
- Cross NM, Perry J, Dong Q, Luo G, Renslo J, **Chang BC**, et al. Subject-level spinal osteoporotic fracture prediction combining deep learning vertebral outputs and limited demographic data. Arch Osteoporos. 2024 Sep 10;19(1):87.

2023

- Dong Q, Luo G, Lane NE, Lui LY, Marshall LM, Johnston SK, Dabbous H, O'Reilly M, Linnau KF, Perry J, **Chang BC**, Renslo J, Haynor D, Jarvik JG, Cross NM. Generalizability of Deep Learning Classification of Spinal Osteoporotic Compression Fractures on Radiographs Using an Adaptation of the Modified-2 Algorithm-Based Qualitative Criteria. Acad Radiol. 2024 Mar 27;31(3):345-353.

2016

- Wong LC, Wang L, D'Amour JA, Yumita T, Chen G, Yamaguchi T, **Chang BC**, Bernstein H, You X, Feng JE, Froemke RC, Lin D. Effective Modulation of Male Aggression through Lateral Septum to Medial Hypothalamus Projection. Curr Biol. 2016 Mar 7;26(5):593-604.

Select Presentations

2023

- Ensembling segmentation methods to detect vertebral bodies on radiographs | Conference Presentation | National Library of Medicine (NLM) T15 Training Conference | 2023
- Ensembling segmentation methods to detect vertebral bodies on radiographs | Seminar Presentation | Institute of Medical Data Science, University of Washington School of Medicine | 2023