Brian Chang, MD

Medical Data & Al Scientist | Informatician



A medical doctor turned data scientist and informatician, I have 10+ years of experience in clinical medicine across frontline healthcare delivery, observational research, and development of AI models using real-world clinical data for predictive modeling and patient phenotyping. During my PhD training, I have worked collaboratively with clinicians, biostatisticians, and informaticians across various departments and domains with a proven track record in developing scalable data pipelines, implementing machine learning models, and leading interdisciplinary research projects. Furthermore, I have applied data science and AI methods across disparate health-related data modalities in my research and am passionate about leveraging data to improve healthcare outcomes.

Education

PhD - Biomedical Informatics | Data Science Specialization

Sept 2020 - Present

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 R

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 Al | Machine Learning | Data Strategy |
Data Quality | Data Mining | Biostatistics | Natural Language Processing
|Ontologies | Python | SQL | Git | Docker | Software Engineering Best
Practices | MLOps | Unix | PySpark | PyTorch | Keras | TensorFlow |
Palantir Foundry | Data Visualization | Clinical Medicine | Electronic Health
Records | OMOP Common Data Model

Certifications

Epic

- 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

Sep 2023 –

Graduate Research Assistant

University of Washington - Seattle, WA

- Designed and implemented a scalable pipeline in Palantir Foundry, enabling efficient processing of 100,000+ US residential addresses for health data standardization
- Adhered to OMOP Common Data Model to ensure cross-study consistency and data compatibility, contributing to dataset interoperability
- 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

Sep 2020 -Sep 2023

Aug 2011 -June 2014

Aug 2008 -

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), unstructured documentation, and imaging analysis to predict vertebral compression fractures
- Collaboratively developed an automated opportunistic screening pipeline to detect vertebral compression fractures on lateral radiographs of the spine
- 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

Neuroscience Research Assistant

NYU Langone Health Neuroscience Institute - New York, NY

- Lead engineer in building custom optrodes used to study behavioral aggression in transgenic mice via electrophysiology and optogenetics
- Conducted stereotaxic surgeries ensuring precise viral delivery of channelrhodopsin, which enabled targeted study of neural circuits in aggression pathways
- Executed in vivo optrode and electrophysiology recordings, achieving highresolution neural signal capture critical for identifying aggression-related neural patterns
- Conducted comprehensive histochemical analysis with perfusion and cryosection, ensuring precise localization of neural markers across 10+ experimental subjects

Emergency Medical Technician

Montville Township First Aid Squad - Montville, NJ

- Certified EMT-B responding to 911 calls
- Collaboratively launched the First Aid Squad Cadet program for minors to attain EMT-B certification

Volunteer Activities

NYU Pre-Medical Peer Mentorship Program

2016 - 2020

- Mentored prospective medical school applicants throughout the application process
- Reviewed and enhanced personal statements and essays, improving applicants' narrative strength and competitiveness in medical school admissions
- Conducted mock interviews, helping applicants refine responses with feedback indicating improved interview performance

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