Jiheum Park, PhD

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EDUCATION

PhD, Biomedical Engineering — Seoul National University, Seoul, South Korea 03/2012 – 02/2017

BS, Mechanical Engineering — Cornell University, Ithaca, NY 09/2007 – 05/2011

POSTDOCTORAL TRAINING

Postdoctoral Research Scientist — Columbia University, New York, NY 09/2020 – 09/2021

Postdoctoral Associate — Yale University, New Haven, CT 02/2017 – 06/2020

ACADEMIC APPOINTMENTS

Assistant Professor — Weill Cornell Medicine, New York, NY 07/2026 – present

Assistant Professor — Columbia University Irving Medical Center, New York, NY 03/2024 – 07/2026

Research Scientist — James J. Peters VA Medical Center, Bronx, NY 05/2024 – present

Instructor — Columbia University Irving Medical Center, New York, NY 03/2023 – 03/2024

Associate Research Scientist — Columbia University Irving Medical Center, New York, NY 09/2021 – 03/2023

HONORS AND AWARDS

Finalist, Yale Innovation Summit Tech Pitch Contest 2019
Yale University

Finalist, Yale Innovation Summit Tech Pitch Contest 2018
Yale University

ASAIO Y. Nosé International Fellowship 2016
American Society for Artificial Internal Organs

Excellence Poster Award 2015
Seoul National University

Excellence Poster Award 2014
Seoul National University

Global PhD Fellowship 2012-2017
National Research Foundation of Korea

Best Paper Award 2012
The Korean Society of Medical & Biological Engineering

PROFESSIONAL ORGANIZATIONS AND SOCIETY MEMBERSHIPS

Meyer Cancer Center (MCC) · 2026 – present

Herbert Irving Comprehensive Cancer Center (HICCC) · 2024 – 2026

American Society for Artificial Internal Organs (ASAIO) · 2016 – 2020

IEEE Engineering in Medicine and Biology Society · 2014 – 2017

RESEARCH

Research Overview

Dr. Park's research focuses on developing and evaluating interpretable, deployable artificial intelligence (AI) systems for clinical decision support, with an emphasis on learning from large-scale longitudinal electronic health record (EHR) data. This work integrates representation learning, multimodal data modeling, and generative AI to enable early disease detection, risk stratification, and clinically meaningful explanation. A central theme is bridging methodological innovation with real-world clinical implementation, including evaluation of model utility, fairness, and impact on clinical decision-making.

This research has advanced longitudinal EHR-based modeling for early cancer detection, including the development of deep learning and foundation model approaches that capture temporally ordered clinical data such as laboratory values, diagnoses, and procedures. More recently, the work has incorporated large language models (LLMs) to generate structured, clinically interpretable outputs and to support clinician-AI collaboration, moving beyond post hoc interpretability toward evaluating how AI-generated explanations influence clinical behavior. The research also includes integration of EHR and genomic data for population-level risk modeling, and the use of simulation-based frameworks to quantify the clinical impact of early detection strategies.

Dr. Park has led and contributed to multiple federally funded, multi-institutional studies, including NIH K25, R01, and R03 awards, a Department of Defense (DoD) Pancreatic Cancer Research Program (PCARP), and prior leadership roles on NIH R21 projects. This research leverages diverse real-world data sources, including the All of Us Research Program and Veterans Health Administration data, and emphasizes deployment-aware study design.

The long-term goal of this research program is to develop trustworthy, human-centered AI systems that improve early detection and clinical outcomes through seamless integration into healthcare systems.

Current Research Funding

Scalable Multi-Cancer Early Detection Using EHR Foundation Model with Interactive Clinical Explanations
National Institute of Biomedical Imaging and Bioengineering · $594,178/year · 09/2026 – 07/2030
PI(s): Jiheum Park | Role: PI | Effort: 15%

A Scalable, Open-Source Generative LLM Tool for Automated Classification of Diagnostic Errors
National Library of Medicine · $41,125/year · 05/2026 – 04/2028
PI(s): Jiheum Park, Jerard Z. Kneifati-Hayek | Role: Contact PI | Effort: 5%

Enhancing Early Detection of Pancreatic Cancer Using GPT-Embedded EHR Models: A Novel Approach for Improved Predictive Performance and Interpretability
Department of Defense · $280,000/year · 08/2025 – 07/2028
PI(s): Jiheum Park, Chin Hur | Role: Contact PI | Effort: 20%

Early Detection of Pancreatic Cancer with Human-in-the-Loop Deep Learning
National Cancer Institute · $178,610/year · 05/2023 – 04/2028
PI(s): Jiheum Park | Role: PI | Effort: 60%

Pending Funding

Clinician-AI Teaming for Early Detection of GI Cancers
National Institute of Biomedical Imaging and Bioengineering · $499,000/year · 12/2026 – 02/2031
PI(s): Jiheum Park | Role: PI | Effort: 25%

Multi-omics Profiling of IPF Endotypes
National Heart, Lung, and Blood Institute · $499,000/year · 07/2026 – 06/2031
PI(s): David Zhang | Role: Co-I | Effort: 5%

Past (Completed) Funding

Domain-Knowledge Informed Deep Learning for Early Detection of Pancreatic Cancer
National Cancer Institute · $216,000/year · 07/2021 – 06/2023
PI(s): Chin Hur, Nicholas Tatonetti | Role: Co-I (project leader) | Effort: 100%

Hydrodynamic Trap-and-Release of Microparticles Using Hydraulic Jump Phenomenon
National Research Foundation of Korea · $23,000/year · 03/2012 – 02/2017
PI(s): Jiheum Park | Role: PI | Effort: 100%

Patents & Inventions

Lee JC, Park J, Kim HC, Park JY, Lee GH. "Microchip for Cell Spheroid Fabrication, Cell Spheroid Fabrication Apparatus Including the Same, and Cell Spheroid Fabrication Method." Korean Patent Registration No. 10-2016-0030545 (March 14, 2016).

MENTORING

Institutional Training Grants and Mentored Trainee Grants

Benefits and Harms of Helicobacter pylori Test-and-Treat for Gastric Cancer
American Gastroenterological Association Research Scholar Award · 07/2026 – 06/2029
PI(s): Jiheum Park (mentor) | Role: Mentor

Current Mentees

Gargi Bhattacharya 09/2026 – present
Weill Cornell Medicine — Research Assistant

Development of an EHR-based risk prediction model for early detection of endometrial cancer using All of Us data. Mentorship focuses on study design and analytic strategies for evaluating machine learning–based risk prediction against a published traditional regression model. Goals: first-author publication and preparation for PhD program applications.

Jeong Yun Yang 09/2025 – present
Columbia University Irving Medical Center — Postdoctoral Clinical Fellow
Development of a personalized risk stratification framework for Helicobacter pylori–associated complications using longitudinal EHR and genomic data; co-mentored study design and analytic strategy for machine learning–based prediction of peptic ulcer disease and gastric cancer, with integration into simulation-based cost-effectiveness modeling using population-scale datasets (e.g., All of Us). Recognized with an American Gastroenterological Association (AGA) award. Goals: first-author publications and preparation for K08 submission and transition to independent investigator.

Past Mentees

Jiyoon Lee 09/2025 – 05/2026
Columbia University — Master's student
Retrospective counterfactual simulation study evaluating the clinical impact of deploying EHR-based predictive models compared to current screening approaches for colorectal cancer. Developed cohort definitions, implemented the simulation framework, and conducted comparative analyses of early detection strategies. Goals: first-author peer-reviewed publication and development of methodological expertise in EHR-based modeling and simulation-based evaluation of clinical AI systems.

Stephanie Y. Shue 01/2024 – 04/2025
Columbia University Irving Medical Center — Research Analyst
Led analyses of population-scale genomic and EHR data from the All of Us Research Program to investigate genetic associations in non-European populations with pulmonary fibrosis and population-specific influences on sleep-related health outcomes. Resulted in co-first-author publication in American Journal of Respiratory and Critical Care Medicine (Park and Shue, 2025).
Current position: N/A

Andrea Guadalupe Sanchez Aguilar 10/2019 – 01/2020
Yale University — Postgraduate Associate
Designed and developed a functional prototype of a cardiac assist device integrated with a wireless power transfer system for implantable applications; contributed to system design, prototyping, and experimental validation of short- and long-range wireless energy transmission using resonant coupling, demonstrating feasibility of a wearable-to-implant energy delivery system with potential applications in left ventricular assist devices (LVADs).
Current position: Lead Reviewer at FDA

PROFESSIONAL SERVICE

Grant Reviewing / Study Sections

Ad hoc Reviewer, NIH Center for Scientific Review (CSR), Special Emphasis Panels — 2025 – present

Journal Reviewing / Ad hoc Reviewing

npj Digital Medicine · 2025 – present

Scientific Reports · 2025 – present

BioData Mining · 2025 – present

BMC Cancer · 2025 – present

BMC Gastroenterology · 2025 – present

BMC Medical Informatics and Decision Making · 2025 – present

Discover Oncology · 2025 – present

INVITATIONS TO SPEAK / PRESENT

Regional

Transforming Early Cancer Detection with EHR and AI 2025
Columbia University Department of Biomedical Informatics, New York

National

From Traditional Risk Factors to EHR-Based Cancer Risk Prediction 2026
15th NCI EDRN Scientific Workshop, Maryland

Towards Scalable Early Cancer Detection Using Electronic Health Records 2025
Harvard Medical School, Boston

International

Transforming Early Cancer Detection with EHR and AI 2025
Early Cancer Detection Conference, Portland

Population Screening for Lynch Syndrome: Insights from the All of Us Research Program 2025
Samsung Changwon Hospital Symposium, South Korea

BIBLIOGRAPHY

Peer-Reviewed Research Articles

1. Aswani N, **Park J**, Lim F, Prest M, Ferris J, Yang JY, Gong L, Kang S, Hur C. Projected impact of population-level multi-cancer early detection screening: a discrete event simulation analysis. *Journal of the National Cancer Institute*. In press.

2. Cham J, Yang E, **Park J**, White R, Fojo T, Seigel K, Bates S. Impact of Beta Blockers, Statins, and Cholinergic Agents on Clinical Outcomes in Pancreatic Cancer: A Retrospective VA Cohort Study. *Cancer Epidemiology Biomarkers & Prevention*. In press.

3. Kneifati-Hayek J, Peabody I, Baille C, **Park J**, Gu T, Elias J, Hentel K, Kang S, Weng C, Shelton R, Weintraub J, Rinke M, Fertel B, Adelman J. Wrong-Side Imaging Orders: Automated Detection Using Electronic Health Record Data — A Retrospective Cohort Study. *BMJ Open Quality*. 2026 Jun 5. PMC13250234.

4. **Park J**, Pang C, Lee T, Yang JY, Berkowitz J, Wei A, Tatonetti N. Toward Scalable Early Cancer Detection: Evaluating EHR-Based Predictive Models Against Traditional Screening Criteria. *npj Precision Oncology*. 2026 May 15. PMID: 42141079.

5. Kneifati-Hayek JZ, Peabody I, Elias J, **Park J**, Gu T, Weintraub J, Kang S, Hentel K, Fertel B, Adelman JS, Baillie C. Diagnostic Imaging Orders Canceled by Radiology: A Study of Over 7 Million Orders From a Single Health System. *American Journal of Roentgenology*. 2025 Sep 17. PMID: 40960246.

6. Yang JY, **Park J**, Pang C, Huang RJ, Camargo MC, Hur C. Underreporting of Gastric Intestinal Metaplasia Due to Underutilization of Diagnostic Codes. *Gastro Hep Advances*. 2025 Sep 1:100789. PMC12547224.

7. **Park J**, Shue S, Zhang D. Genetic Associations in Non-Europeans with Pulmonary Fibrosis: Analysis of the All of Us Cohort. *Am J Respir Crit Care Med*. 2025 Aug 13. PMID: 40802651.

8. **Park J**, Patterson J, Acitores Cortina JM, Gu T, Hur C, Tatonetti N. Enhancing EHR-based pancreatic cancer prediction with LLM-derived embeddings. *npj Digital Medicine*. 2025 Jul 21;8(1):465. PMCID: PMC12280092.

9. **Park J**, Karnati K, Prest M, Rustgi SD, Hur C, Kong XF, Kastrinos F. Impact of Population Screening for Lynch Syndrome: Insights from the All of Us Data. *Nature Communications*. 2025 Jan 9;16(1):523. PMC11718231.

10. **Park J**, Lim F, Prest M, Ferris J, Aziz Z, Agyekum A, Wagner S, Gulati R, Hur C. Quantifying the potential benefits of early detection for pancreatic cancer: results of a counterfactual simulation modeling analysis. *Scientific Reports*. 2023 Nov 16;13(1):20028. PMC10654404.

11. **Park J**, Artin MG, Lee KE, May BL, Park M, Hur C, Tatonetti NP. Structured deep embedding model to generate composite clinical indices from electronic health records for early detection of pancreatic cancer. *Patterns*. 2022 Dec 6:100636. PMC9868652.

12. **Park J**, Artin MG, Lee KE, Pumpalova YS, Ingram MA, May BL, Park M, Hur C, Tatonetti NP. Deep learning on time series laboratory test results from electronic health records for early detection of pancreatic cancer. *Journal of Biomedical Informatics*. 2022 May, 20:104095. PMC10286873.

13. **Park J** and Bonde PN. Machine Learning in Cardiac Surgery: Predicting Mortality and Readmission. *American Society for Artificial Internal Organs*. 2022 May. pp. 10-1097. PMID: 35544455.

14. Zheng B, Artin MG, Chung H, Bing C, Sun S, May BL, Hur C, Green PH, Wang TC, **Park J**, Kong XF. Immunogenetics of gastrointestinal cancers: A systematic review and retrospective survey of inborn errors of immunity in humans. *Journal of Gastroenterology and Hepatology*. 2022 Apr 5. PMC9301767.

15. Ingram MA, Lauren BN, Pumpalova Y, **Park J**, Lim F, Bates S, Kastrinos F, Manji GA, Kong CY, Hur C. Cost-effectiveness of neoadjuvant FOLFIRINOX vs gemcitabine plus nab-paclitaxel in borderline resectable/locally advanced pancreatic cancer patients. *Cancer Reports*. 2021 Sep 21. doi:10.1002/cnr2.1565. PMC9458514.

16. Stawiarski K, Olayinka A, **Park J**, Mangi AA, Geirsson A, Jacoby D, Chen M, Bellumkonda L, Ahmad T, Testani JM, Chou J, Lee F, Bonde PN. Impact of Preoperative Lymphopenia on Survival Following Left Ventricular Assist Device Placement. *American Society for Artificial Internal Organs*. 2020 Oct 14. PMID: 33074860.

17. **Park J**, Oki K, Hesselmann F, Geirsson A, Kaufmann T, Bonde P. Biologically Inspired, Open, Helicoid Impeller Design for Mechanical Circulatory Assist. *American Society for Artificial Internal Organs*. 2019 Oct 23. doi:10.1097/MAT.0000000000001090. PMID: 32740350.

18. Bouwmeester JC, **Park J**, Valdovinos J, Bonde P. Wave intensity analysis of right ventricular function during pulsed operation of rotary left ventricular assist devices. *American Society for Artificial Internal Organs*. 2019 Jul 1;65(5):465-72. PMC6335194.

19. Bouwmeester JC, **Park J**, Geirsson A, Valdovinos J, Bonde P. Quantification of Pulsed Operation of Rotary Left Ventricular Assist Devices with Wave Intensity Analysis. *American Society for Artificial Internal Organs*. 2019 May 1;65(4):324-30. PMC6251778.

20. **Park J**, Geirsson A, Bonde PN. Mathematical Blueprint of a Mitral Valve. *Seminars in Thoracic and Cardiovascular Surgery*. 2019 Jan 8;31(3):399-411. PMID: 30633976.

21. Waters BH†, **Park J**†, Bouwmeester JC, Valdovinos J, Geirsson A, Sample AP, Smith JR, Bonde P. Electrical power to run ventricular assist devices using the Free-range Resonant Electrical Energy Delivery system. *The Journal of Heart and Lung Transplantation*. 2018 Dec 1;37(12):1467-74 (†equal contribution). PMC6240491.

22. Letzen B, **Park J**, Tuzun Z, Bonde P. Design and Development of a Miniaturized Percutaneously Deployable Wireless Left Ventricular Assist Device: Early Prototypes and Feasibility Testing. *American Society for Artificial Internal Organs*. 2018 Mar 1;64(2):147-53. PMC5823723.

23. **Park J**†, Lee GH†, Park JY, Lee JC, Kim HC. Hypergravity-induced Multicellular Spheroid Generation with Different Morphological Patterns Precisely Controlled on a Centrifugal Microfluidic Platform. *Biofabrication*. 2017 Nov 14;9(4):045006 (†equal contribution). PMID: 29045238.

24. Jung JY, Kwak YH, Kwon H, Choi YJ, Kim DK, Kim HC, Lee JC, **Park J**, Lim H. Effectiveness of Finger-marker for Maintaining the Correct Compression Point During Pediatric Resuscitation: A Simulation Study. *The American Journal of Emergency Medicine*. 2017 Sep 1;35(9):1303-8. PMID: 28483276.

25. **Park J**, Shin DA, Lee S, Cho YJ, Jheon S, Lee JC, Kim HC. Investigation of Key Circuit Constituents Affecting Drug Sequestration During Extracorporeal Membrane Oxygenation Treatment. *American Society for Artificial Internal Organs*. 2017 May 1;63(3):293-8. PMID: 27922880.

26. Shin DA†, **Park J**†, Lee JC, Do Shin S, Kim HC. Computational Simulation of Passive Leg-Raising Effects on Hemodynamics During Cardiopulmonary Resuscitation. *Computer Methods and Programs in Biomedicine*. 2017 Mar 1;140:195-200 (†equal contribution). PMID: 28254076.

27. **Park J**, Lee GH, Park JY, Lee JC, Kim HC. A Numerical Study of the Coriolis Effect in Centrifugal Microfluidics with Different Channel Arrangements. *Microfluidics and Nanofluidics*. 2016 Apr 1;20(4):65.

28. **Park J**, Yoon C, Lee JC, Jung JY, Kim DK, Kwak YH, Kim HC. Manikin-integrated Digital Measuring System for Assessment of Infant Cardiopulmonary Resuscitation Techniques. *IEEE Journal of Biomedical and Health Informatics*. 2014 Sep;18(5):1659-67. PMID: 24235316.

Reviews and Editorials

1. **Park J**, Kim KB, Lee J, Kim HC, Huh D. Organomimetic Microsystems Technologies. *Biomedical Engineering Letters*. 2012 Jun 1;2(2):88-94.

Books

1. Valdovinos J, **Park J**, Smith J, Bonde P. Progress on Wireless LVAD and Energy Sources for Mechanical Circulatory Systems. *Mechanical Support for Heart Failure*, 2020, pp. 609-620.

Non-Peer-Reviewed Research Publications

1. **Park J**, Shue SY, Barragan R, Yang JY, Gu T, Hur C, St-Onge MP. Population-Specific Genetic and Non-Genetic Influences on Sleep Traits and Health Outcomes. ArXiv [Preprint]. 2026 May 22:arXiv:2605.23521v1. PMID: 42238063; PMCID: PMC13229075.

In Review

1. Pang C†, **Park J**†, Jiang X, Pavinkurve NP, Kalluri KS, Joshi S, Elhadad N, Natarajan K. CEHR-XGPT: A Foundation Model for Unified Representation, Prediction, and Simulation of Longitudinal Electronic Health Records (†co-first authors). Under review, *npj Digital Medicine*. arxiv.org/abs/2509.03643.

2. Cham J, Yang E, **Park J**, Park YA, Fojo T, Seigel K, Bates S. Real-World Survival Benefit of First-Line Chemo-Immunotherapy in Veterans with Extensive-Stage Small Cell Lung Cancer and Brain Metastases. Submitted, *JTO Clinical and Research Reports*.