Junghwan (Jay) Lee

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EDUCATION

Georgia Institute of Technology, Atlanta, United States — 08/2022 - Present
Ph.D. in Machine Learning

Columbia University, New York, United States — 09/2018 - 02/2020
M.A. in Statistics

Sungkyunkwan University, Seoul, South Korea — 03/2012 - 03/2016
B.S. in Systems Management Engineering

RESEARCH INTERESTS

Machine Learning, **Spatio-temporal Prediction**, **Application for Social Good**

PUBLICATIONS

Journal Articles

1. **J. Lee**, C. Liu, Y. Sun, Z. Chen, J. Rogers, C. Wendy, C. Weng, "Deep Learning for Rare Disease: A Scoping Review", *Journal of Biomedical Informatics*.
2. C. Liu, **J. Lee**, C. Ta, A. Soroush, J.R. Rogers, JH. Kim, K. Natarajan, J. Zucker, C. Weng, "Risk Factors Associated With SARS-CoV-2 Breakthrough Infections in Fully mRNA-Vaccinated Individuals: Retrospective Analysis.", *JMIR public health and surveillance*.
3. **J. Lee***, C. Liu*, JH. Kim, A. Butler, N. Shang, C. Pang, K. Natarajan, P. Ryan, C. Ta, C. Weng, "Comparative Effectiveness of Medical Concept Embedding for Feature Engineering in Phenotyping.", *JAMIA Open*
4. **J. Lee**, JH. Kim, C. Liu, G. Hripcsak, C. Ta, C. Weng, "Columbia Open Health Data for COVID-19 Research: Database Analysis.", *Journal of Medical Internet Research*.
5. J.R. Rogers, **J. Lee**, Z. Zhou, YK. Cheung, G. Hripcsak, C. Weng, "Contemporary Use of Real-World Data for Clinical Trial Conduct in the United States: A Scoping Review.", *Journal of the American Medical Informatics Association*.
6. JH. Kim, M. Hua, RA. Whittington, **J. Lee**, C. Liu, CN. Ta, ER. Marcantonio, TE. Goldberg, C. Weng, "A Machine Learning Approach to Identifying Delirium from Electronic Health Records.", *JAMIA Open*.
7. JH. Kim, CN. Ta, C. Liu, C. Sung, AM. Butler, LA. Stewart, L. Ena, C. Friedman, JR. Rogers, N. Shang, **J. Lee**, H. Liu, A. Ostropolets, K. Natarajan, PB. Ryan, SM. Lee, MSV. Elkind, C. Weng, "Towards Clinical Data-Driven Eligibility Criteria Optimization for Interventional COVID-19 Clinical Trials." *Journal of the American Medical Informatics Association*.
8. C. Liu, C. Ta, J. Rogers, Z. Li, **J. Lee**, A. Butler, N. Shang, F. Kury, L. Wang, F. Shen, L. Ena, C. Friedman, H. Liu, C. Weng, "Ensembles of Natural Language Processing Systems for Portable Phenotyping Solutions.", *Journal of Biomedical Informatics*.

Conference Proceedings

1. **J. Lee**, T. Wanyan, Q. Chen, TDL. Keenan, B. Glicksberg EY. Chew, Z. Lu, F. Wang, Y. Peng, "Predicting Age-related Macular Degeneration Progression with Longitudinal Fundus Images using Deep Learning", *Machine Learning in Medical Imaging workshop at MICCAI 2022.*
2. **J. Lee**, C. Ta, JH. Kim, C. Liu*, C. Weng*, "Severity Prediction for COVID-19 Patients via Recurrent Neural Networks.", *AMIA Annual Symposium Proceedings.*
3. **J. Lee**, C. Liu, C. Ta, C. Weng, "Towards Better Diagnosis Prediction using Bidirectional Recurrent Neural Networks.", *MedInfo 2021.*
4. A. Butler, **J. Lee**, Y. So, L. Busacca, K. Marder, HN. Ginsberg, D. Frederick, I. Castaneda, C. Weng, "Impact of IMPACT: Longitudinal Analysis of an Integrated Patient Scheduling System in a Clinical Research Setting.", *AMIA Annual Symposium Proceedings.*

Work in Progress

1. 'Neural Tangent Kernel Maximum Mean Discrepancy for Online Change-Point Detection'

Poster & Workshop Presentations

1. **J. Lee**, T. Wanyan, Q. Chen, TDL. Keenan, EY. Chew, Z. Lu, F. Wang, Y. Peng, "Predicting 2-year and 5-year Late AMD Progression using Deep Learning with Longitudinal Fundus Images", ARVO Annual Meeting, 2022, *poster presentation.*
2. **J. Lee***, C. Ta*, C. Liu, JH. K, C. Weng, "COHD-COVID: Publicly Shared COVID-19 Statistics Mined from EHR Data.", Observational Health Data Science and Informatics Symposium, 2020, *poster presentation.*
3. **J. Lee**, C. Liu, N. Shang, X. Jiang, K. Chen, K. Kalluri, C. Pang, K. Natarajan, P. Ryan, C. Weng, "Generate Concept Representations using OMOP Ontology Graph.", Observational Health Data Science and Informatics Symposium, 2019, *poster presentation.*

Invited Talks

1. "Severity Prediction in COVID-19: Can We Predict Disease Severity and Outcomes at Early Stage?", Columbia University Zuckerman Institute, October 2020.

EXPERIENCE

Research Staff Associate 02/2020 - 06/2022
Columbia University, NY

Research Assistant 01/2019 - 12/2019
Columbia University, NY

Researcher 10/2018 - 01/2019
Seoul National University College of Medicine, Seoul, Korea

Army Officer 02/2016 - 06/2018
The 2nd Operational Command, Deagu, Korea

Research Assistant 01/2015 - 12/2015
Sungkyunkwan University, Seoul, Korea

SERVICES

npj Digital Medicine, Reviewer

Journal of Medical Internet Research, Reviewer

HONORS & AWARDS

Topper Fellowship, Georgia Institute of Technology, 2022

Commendation for Commitment, Republic of Korea Army, 2018

Meritorious Unit Commendation, The 2nd Operational Command, 2017

Merit-based Scholarship, Sungkyunkwan University, 2015

Academic Scholarship, Sungkyunkwan University, 2013

Gifted Student of Incheon National University, 2004-2005

Young Gifted Student of Incheon City Office of Education, 2002-2004

REFERENCES

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Prof. Juneseuk Shin
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Department of Systems Management Engineering
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