Ju Cheol Moon

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RESEARCH INTERESTS

Deep Learning, Machine Learning, Data Science, Bioinformatics, Algorithms.

EDUCATION

Iowa State University, Ames, Iowa, USA

Doctor of Philosophy (Ph.D.) in Computer Science — Aug 2012 – Aug 2017
- Dissertation: Synthesizing Species Trees from Gene Trees Using the Parameterized and Graph-theoretic Approaches

South Dakota State University, Brookings, South Dakota, USA

Master of Science (M.S.) in Computer Science — Jan 2010 – May 2012
- Thesis: Extracting Breast Cancer Feature and Generating Its Parametric Pattern in Medical Images

Korea University, Seoul, Republic of Korea

Bachelor of Science (B.S.) in Physics — Mar 1997 – Jul 2004

PROFESSIONAL EXPERIENCE

Assistant Professor, California State University Long Beach — 2018 – Current
Department of Computer Engineering and Computer Science

Lecturer, California State University Long Beach — 2017 – 2018
Department of Computer Engineering and Computer Science

Data Scientist, Dongbu HiTek, Semiconductor Foundry — 2005 – 2009
Manufacturing Data Analysis Team

RESEARCH GRANTS

Ministry of Science and ICT, Republic of Korea, PI, $99,403 — 2020 – 2021
Deep Learning-based Healthcare System for Disease Early Detection.
No. 2020-0-01463

State of California, USA, co-PI, $66,984 — 2020 – 2021
Trip Scheduling and the Cost of Congestion - Estimates Using Travel Diary Data and Big Data.
No. 22-1100-6115-CSULB-2031, PI: Jinwon Kim

Research Foundation, California State University Long Beach, co-PI, $15,000 — 2023 – 2024
Creating education advertising using generative models.
PI: Aiden Lee

Research Foundation, California State University Long Beach, PI, $14,700 — 2021 – 2022
Data driven regression modeling in social sciences, using deep neural networks.

Academic Advisory Council for Signage Research and Education, co-PI, $4,000 — 2023 – 2024
Creating on-premise signage using generative models.
PI: Aiden Lee

PUBLICATIONS **JOURNALS**

Heo J., Hwang S., Moon J., You J., Kim H., Cha J., & Kim K. (2023). A framework of transportation mode detection for people with mobility disability *Journal of Intelligent Transportation Systems*, 1 – 16

Hwang S., Heo J., Cho Y., Moon J., Lee Y., Kim H., Cha J., & Kim K. (2023). Transportation Mode Detection Technology to Predict Wheelchair Users' Life Satisfaction in Seoul, South Korea. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 8(1), 1 – 20

Hwang S., Heo J., Moon J., You J., Kim H., Cha J., & Kim K. (2023). User and Period Independent Transportation Mode Detection for Wheelchair Users. *IEEE Access* 11, 10801 – 10812

Cheon H., Kim T., Kim B.K., Moon J., & Kim H. (2022). Online Waypoint Path Refinement for Mobile Robots Using Spatial Definition and Classification Based on Collision Probability. *IEEE Transactions on Industrial Electronics* 70(7), 7004 – 7013

Moon J., Jung J., Kang E., & Choi S.I. (2022). Open Set User Identification Using Gait Pattern Analysis Based on Ensemble Deep Neural Network. *IEEE Sensors Journal* 22(17)

Moon J., Hong J.G., & Park T.W. (2022). A Novel Method for Traffic Estimation and Air Quality Assessment in California. *Sustainability* 14(15), 9169

Le N., Moon J., Lowe C.G., Kim H.-I., & Choi S.I. (2022). An Automated Framework Based on Deep Learning for Shark Recognition. *Journal of Marine Science and Engineering* 10(7), 942

Moon J., Shin Y.M., Park J.D., Minaya N.H., Shin W.Y., & Choi S.I. (2022). Explainable gait recognition with prototyping encoder–decoder. *PLoS ONE* 17(3): e0264783

Byun, S., Shin, I.K., Moon, J., Kang, J., & Choi, S.I. (2021). Road Traffic Monitoring from UAV Images Using Deep Learning Networks. *Remote Sensing* 13(20), 4027

Moon, J., Le. N., Minaya. N.H., & Choi. S.I. (2020). Multimodal Few-Shot Learning for Gait Recognition *Applied Sciences* 10(21), 7619

Moon, J., Minaya, N.H., Le, N., Park, H.C., & Choi, S.I. (2020). Can Ensemble Deep Learning Identify People by Their Gait Using Data Collected from Multi-Modal Sensors in Their Insole? *Sensors* 20(14), 4001

Choi, S.I., Moon, J., Park, H., & Choi, S.T. (2019). User Identification from Gait Analysis Using Multi-Modal Sensors in Smart Insole. *Sensors* 19(17), 3785

Moon, J. & Eulenstein, O. (2017). Synthesizing Large-scale Species Trees using the Strict Consensus Approach. *Journal of Bioinformatics and Computational Biology* 15(03), 1740002

Moon, J., Lin, H.T., & Eulenstein, O. (2016). Consensus Properties and their Large-Scale Applications for the Gene Duplication Problem. *Journal of Bioinformatics and Computational Biology* 14(03), 1642005

CONFERENCES (FULL PAPER)

Coleman, T. & Moon, J. (2019, September). A biometric for shark dorsal fins based on boundary descriptor matching. *Paper presented at the 32nd International Conference on Computer Applications in Industry and Engineering*, (pp. 63–71)

Moon, J. & Eulenstein, O. (2019, June). The Cluster Affinity Distance for Phylogenies. *Paper presented at the 15th International Symposium on Bioinformatics Research and Applications*, (pp. 52–64)

Moon, J. & Eulenstein, O. (2018, June). Cluster Matching Distance for Rooted Phylogenetic Trees. *Paper presented at the 14th International Symposium on Bioinformatics Research and Applications*, (pp. 321–332)

Moon, J. & Eulenstein, O. (2017, August). Synthesizing Species Trees from Unrooted Gene Trees: A Parameterized Approach. *Paper presented at the 8th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics*, (pp. 253–252)

Moon, J. & Eulenstein, O. (2016, October). Robinson-Foulds Median Trees: A Clique-based Heuristic. *Paper presented at the 7th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics*, (pp. 374–383)

Moon, J., Friedberg, I., & Eulenstein, O. (2016, August). Highly Bi-Connected Subgraphs for Computational Protein Function Annotation. *Paper presented at the 22nd International Computing and Combinatorics Conference*, (pp. 573–584)

Moon, J. & Eulenstein, O. (2016, April). Synthesizing Large-Scale Species Trees using Guidance Trees. *Paper presented at the 8th International Conference on Bioinformatics and Computational Biology*, (pp. 103–108)

Lin, H. T., Moon, J. & Eulenstein, O. (2015, March). Consensus Properties of the Gene Duplication Problem for Enhanced Phylogenetic Inference. *Paper presented at the 7th International Conference on Bioinformatics and Computational Biology*, (pp. 131–136)

CONFERENCES (POSTER / ABSTRACT)

Shu, G.Y. & Moon, J. (2020, October). Aortic Endograft Modeling Using Computed Tomography and Machine Learning. *Poster presented at the 2020 Bio Medical Engineering Society virtual annual meeting*

AWARDS & HONORS

Best Paper Award — Oct 2019
32nd International Conference on Computer Applications in Industry and Engineering
Title: A biometric for shark dorsal fins based on boundary descriptor matching

NSF Travel Award — Oct 2016
8th International Conference on Bioinformatics and Computational Biology
For US-based students and young researchers

Best Paper Award Finalist — Apr 2016
7th International Conference on Bioinformatics and Computational Biology
Title: Synthesizing Large-Scale Species Trees using Guidance Trees

Teaching Excellence Award — Dec 2015
Iowa State University
Honors the top 10% of graduate students for outstanding teaching

Pragmatics Fellow Scholarship — Aug 2012
Iowa State University
For new graduate students who have high potential

Choi Byungsun Scholarship — Mar 2003
Korea University
Honors the top 10% of undergraduate students for outstanding GPA

Freshman Special Scholarship — Mar 1997
Korea University
Honors the top 10% of undergraduate students for outstanding entrance score

TEACHING EXPERIENCE

California State University, Long Beach — 2017 – Current

- CECS551: Advanced Artificial Intelligence
- CECS524: Advanced Topics in Programming Languages
- CECS451: Artificial Intelligence
- CECS424: Organization of Programming Languages
- CECS341: Computer Architecture and Organization
- CECS327: Introduction to Networks and Distributed Computing
- CECS228: Discrete Structures with Computer Science Applications
- BME201: Programming for Biomedical Engineering