Sumin Han

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INTRODUCTION

Since high school, I have been learning the basics of computer science. As soon as I entered university, I proposed a chat service between lawyers and people in my freshman year and participated in a campus startup program. This experience consequently led me to join Law&Company Corp (Series-C 2022). As one of the early startup members in 2014, I developed the LawTalk service and significantly sped up chat services by optimizing the WebSocket structure. Although the startup experience was exciting, I felt it lacked depth, so I returned to my undergraduate studies, eagerly taking courses about designing and creating software.

During my time in the integrated master's and doctoral program at KAIST's Department of Computer Science, I wanted to research newer topics. Under the guidance of Professor Dongman Lee, who specialized in computer networks, I researched artificial intelligence that cleanses urban data and predicts the future city under the concept of 'Urban Space Robot' of CDSN Lab. Despite the interdisciplinary field of urban engineering and computer science not being widely recognized in main AI discourses, I published a paper on traffic prediction at the prestigious CIKM conference. I still continue to explore various research areas, including real estate prediction and urban agent simulation based on the large language models.

Since my undergraduate days, I have been interested in technology that people can practically use, focusing on creating technology that can be utilized in the real life. In the process, I have also built a city data DB and carried out various visualization projects. Moreover, I have educated and collaborated with many undergraduate interns. I aspire to contribute to creating practical AI services using real-world data for people.

EDUCATION

Korea Advanced Institute of Science and Technology (Daejeon)	Mar. 2018 – Aug. 2024
Ph.D. in Computer Science (Integrated MS. and Ph.D.)	
Korea Advanced Institute of Science and Technology (Daejeon)	Mar. 2013 – Feb. 2018
Bachelor of Science in Computer Science	
Korea Science Academy of KAIST (Busan)	Mar. 2009 – Feb. 2013
Science High School for the Gifted	

PUBLICATIONS

INTERNATIONAL

[1] Sumin Han, Youngjun Park, Sabir Sonia, Jisun An, and Dongman Lee. "Improving Real Estate Appraisal with POI Integration and Areal Embedding". In: *DMO-FinTech Workshop held in conjunction with the PAKDD conference in May 7-10.* 2024.

[2] Youngjun Park and Sumin Han. "Enhancing Population Predictions in Developing Area through Building Construction Data". In: *Association of European Schools Of Planning (AESOP)* (2024).

[3] Sumin Han, Youngjun Park, Minji Lee, Jisun An, and Dongman Lee. "Enhancing Spatiotemporal Traffic Prediction through Urban Human Activity Analysis". In: *Proceedings of the 32nd ACM International Conference on Information and Knowledge Management (CIKM '23).* 2023.

[4] Youngjun Park, Sumin Han, Jisun An, and Dongman Lee. "Encoding Urban Trajectory as a Sentence: Deep Learning Insights for Human Mobility Pattern". In: *Association of Collegiate Schools of Planning (ACSP)* (2023).

[5] Sumin Han, Dasom Hong, and Dongman Lee. "Exploring commercial gentrification using Instagram data". In: *2020 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM).* IEEE. 2020, pp. 557–564.

[6] Sumin Han, Kinam Park, and Dongman Lee. "Discovering Daily POI Exploitation Using LTE Cell Tower Access Traces in Urban Environment". In: *International Conference on Social Informatics (SocInfo)*. Springer. 2020, pp. 81–94.

[7] Dongmin Kim, Sumin Han, Heesuk Son, and Dongman Lee. "Human Activity Recognition Using Semi-supervised Multi-modal DEC for Instagram Data". In: *Advances in Knowledge Discovery and Data Mining: 24th Pacific-Asia Conference, PAKDD 2020, Singapore, May 11–14, 2020, Proceedings, Part I 24*. Springer. 2020, pp. 869–880.

DOMESTIC

[1] Thanh Long Cao, Sumin Han, and Dongman Lee. "Applying Scene Graphs for Improving Multi-modal Supervised Learning based Human Activity Recognition on Instagram Posts". In: 한국정보과학회 학술발표논문집 (2022), pp. 855–857.

[2] Changhui Kim, Sumin Han, and Dongman Lee. "Inference of Station-unit Placeness through a Subway Ridership Pattern". In: 한국정보과학회 학술발표논문집 (2022), pp. 1794–1796.

[3] Zofia Marciniak, Sumin Han, and Dongman Lee. "Understanding the impact of the Weather on Human Mobility via LTE Access Traces in Seoul Districts". In: 한국 *HCI* 학회 학술대회 (2021), pp. 615–618.

[4] 김수빈, 한수민, and 이동만. "서울시의 토지 이용에 따른 도로의 차량 속도의 상관관계 분석". In: 한국정보과학회 학술발표논문집 (2021), pp. 119–121.

[5] 안정미, 한수민, and 이동만. "인스타그램 데이터를 활용한 장소성 분석 및 시각화". In: 한국 *HCI* 학회 학술대회 (2020), pp. 929–933.

[6] 정종구, 한수민, and 이동만. "인스타그램에서 나타나는 인간 활동 패턴의 연간 변화 분석". In: 한국 *HCI* 학회 학술대회 (2020), pp. 723–726.

[7] 한수민 and 김명호. "베이지안 개인화 순위 방법 기반 대용량 이종 네트워크에서의 효율적인 랜덤 워크 순위 계산". In: *2018 한국소프트웨어종합학술대회*. 한국정보과학회. 2018.

PROJECTS

DeepUrban | Urban data sharing platform, https://deepurban.kaist.ac.kr (2023)
Starlab 2019 | Self-Learning based Autonomic IoT Edge Computing (2019 ~ 2017)

AWARDS

(2023) Best Award for Hwaseong City Analysis Task by Korea Land and Housing Corporation, LH – Proposed a deep learning model for predicting population based on building usage area, and evaluated its performance against existing models like Lasso and Elastic Net.
(2017) (KAIST Department of Humanities and Social Sciences) Best Paper Award – Honorable Mention – "Speaker Recognition in the Transcript Using Keywords"
(2016) Excellence Award in the Supercomputing Competition organized by KISTI – Parallelization of given Sequential code using MPI (Message Passing Interface) technology

PATENTS

1. 이동만, 한수민, "다중지역특징 인식 시공간 대중교통 예측 시스템 및 그 방법 (SYSTEM AND METHOD FOR PREDICTING MULTI-LOCAL FEATURE RECOGNITION SPATIO-TEMPORAL PUBLIC TRANSPORT)", 출원번호: 10-2023-0055885 (2023-04-28)

2. 이동만 한수민, "도시 환경에서 LTE 셀 타워 액세스 트레이스를 이용한 일일 POI 이용 발견 방법 (Method of Discovering Daily POI Exploitation Using LTE Cell Tower Access Traces in Urban Environment)", 출원번호: 10-2021-0047046 (2021-04-12), 등록번호: 10-25947500000 (2023-10-24)

3. 이동만 김동민 한수민 손희석, "소셜 미디어 데이터에 대한 준 지도 멀티 모달 딥 임베디드 클러스터링을 이용한 인간 활동 인식 방법 (Method for Human Activity Recognition Using Semi-supervised Multi-modal Deep Embedded Clustering for Social Media Data)", 출원번호: 10-2021-0009319 (2021-01-22), 등록번호: 10-25149200000 (2023-03-23)