SUNJAE LEE

Department of Computer Science and Engineering, Sungkyunkwan University (SKKU)

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RESEARCH INTERESTS

Mobile and AI-driven systems for next-generation computing.

- **AI Agent system & Human-AI/agent interaction**
  Computer-use/GUI agent, Multi-Agent System, Autonomous Agents, personalized AI

- **Mobile Systems**
  Mobile operating systems, Multi-device platform, Mobile AI assistant, Augmented reality interface

WORK EXPERIENCE

Assistant Professor, Sunkyunkwan University (SKKU) *Rep. Korea*
Department of Computer Science and Engineering Mar 2025 - Prseent

Chief Technology Officer (CTO), Fluiz Corp. ↗ *Rep. Korea*
University spin-off founded by Prof. Insik Shin July 2022 - Feb. 2025

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) **September 2021 – Feb 2025**
PH.D. In Computer Science *Daejeon, Rep.Korea*

- Advisor: Prof. Insik Shin
- Thesis: Towards Ubiquitous and Intelligent Mobile Computing: From UI Distribution to AI agent
- **Outstanding Ph.D. dissertation award** 🏆

Korea Advanced Institute of Science and Technology (KAIST) **March 2019 – Feb 2021**
M.S. In Computer Science *Daejeon, Rep.Korea*

- Advisor: Prof. Insik Shin
- Thesis: UI based Cross-device Screen distribution

Korea Advanced Institute of Science and Technology (KAIST) **September 2012 – Feb 2019**
B.S. In Computer Science *Daejeon, Rep.Korea*

SELECTED PUBLICATIONS

1. **MobiBench: Modular and Multi-Path Aware Benchmarking for Mobile GUI Agents** ↗
   Youngmin Im, Byeongung Jo, Jaeyoung Wi, Seungwoo Beak, Sangeun Oh, Insik Shin, **Sunjae Lee**
   *In Proceedings of the 32th ACM Int. Conf. on Mobile Computing and Networking (**MobiCom '26 under review**)*

2. **VeriSafe Agent: Safeguarding Mobile GUI Agent via Logic-based Action Verification** ↗
   Jungjae Lee, Dongjae Lee, Chihun Choi, Youngmin Im, Jaeyoung Wi, Kihong Heo, Sangeun Oh, **Sunjae Lee***, Insik Shin*
   *In Proceedings of the 31th ACM Int. Conf. on Mobile Computing and Networking (**MobiCom '25**)*

3. **MobileGPT: Augmenting LLM wih Human-like Memory for Mobile Task Automation** ↗
   Sunjae Lee, Junyoung Choi, Jungjae Lee, Munim Hasan Wasi, Hojun Choi, Steven Y. Ko, Sangeun Oh, Insik Shin
   *In Proceedings of the 30th ACM Int. Conf. on Mobile Computing and Networking (**MobiCom '24**)*

4. **FLUID-IoT: Flexible and Fine-Grained Access Control in Shared IoT Environments** ⬈
   Sunjae Lee*, Minwoo Jeong*, Daye Song, Junyoung Choi, Seoyun Son, Jean Y Song, Insik Shin
   *In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (**CHI '24**)*

5. **Supporting Flexible and Transparent User Interface Distribution across Mobile Devices** ⬈
   Sangeun Oh, Ahyeon Kim, **Sunjae Lee**, Kilho Lee, Dae R. Jeong, Steven Y. Ko, and Insik Shin
   IEEE Transactions on Mobile Computing

6. **MixMax: Leveraging Heterogeneous Batteries to Alleviate Low Battery Experience** ⬈
   Jaeheon Kwak, **Sunjae Lee**, Dae R Jeong, Arjun Kumar, Dongjae Shin, Ilju Kim,Donghawa Shing, Kilho Lee, Junkyu Lee, Insik Shin
   *In Proceedings of the 21st ACM int. Conf. on Mobile Systems, Applications, and Services (**MobiSys '23**)*

7. **It is Okay to be Distracted: How Real-time Transcriptions Facilitate Online Meeting with Distraction** ⬈
   Seoyun Son, Junyoung Choi, **Sunjae Lee**, Jean Y Song,Insik Shin
   *In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (**CHI '23**)*

8. **A-Mash: Providing Single-App Illusion for Multi-App Use through User-centric UI Mashup** ⬈
   Sunjae Lee, Hoyoung Kim, Sijung Kim, Sangwook Lee, Hyosu Kim, Jean Young Song, Steve. Ko, and Insik Shin
   *In Proceedings of the 28th ACM Int. Conf. on Mobile Computing and Networking (**MobiCom '22**)*

9. **FLUID-XP: Flexible User Interface Distribution for Cross-Platform Experience** ⬈
   Sunjae Lee, Hayeon Lee, Hoyoung Kim, Sangmin Lee, Jeong Woon Choi, Yuseung Lee, Seono Lee, Ahyeon Kim, Jean Young Song, Sangeun Oh, Steven Y. Ko, and Insik Shin
   *In Proceedings of the 27th ACM Int. Conf. on Mobile Computing and Networking (**MobiCom '21**)*

10. **FLUID: Flexible User Interface Distribution for Ubiquitous Multi-device Interaction** ⬈
    Sangeun Oh, Ahyeon Kim, **Sunjae Lee**, Kilho Lee, Dae R. Jeong, Steven Y. Ko, and Insik Shin
    *In Proceedings of the 25th ACM Int. Conf. on Mobile Computing and Networking (**MobiCom '19, Best Paper** 🏆)*

PATENTS

1. **LLM-based noninvasive application execution system for mobile task automation, and method thereof**   *Rep.Korea*
   Application Number: 10-2744615   *Granted*
   Insik Shin, **Sunjae Lee**   *2024.12.16*

2. **User interface distribution method for multi-device interaction**   *Rep.Korea*
   Application Number: 10-2022-00091130   *Granted*
   Insik Shin, Sangeun oh, Ahyeon Kim, **Sunjae Lee**   *2022.02.28*

3. **Secure user interface distribution method for heterogeneous multi-device interaction**   *Rep.Korea*
   Application Number: 10-2019-0180075   *Published*
   Insik Shin, Sangeun oh, Ahyeon Kim, **Sunjae Lee**   *2019.12.31*

4. **Method of transmitting UI display information based on smart contract**   *Rep.Korea*
   Application Number: 10-2022-0026429   *Published*
   Insik Shin, Daehee Lee, **Sunjae Lee**, Sangwook Lee   *2022.02.28*

5. **Method of transceiving UI displays between user devices**   *Rep.Korea*
   Application Number: 10-2022-0026430   *Published*
   Insik Shin, Daehee Lee, **Sunjae Lee**   *2022.02.28*

6. **Method of transmitting UI display information to peripheral clients by a local server**   *Rep.Korea*
   Application Number: 10-2022-0026426   *Published*
   Insik Shin, Daehee Lee, **Sunjae Lee**   *2022.02.28*

7. **Secure user interface distribution method for heterogeneous multi-device interaction** *U.S*
   Application Number: US17/852,146
   Insik Shin, Sangeun oh, Ahyeon Kim, <u>**Sunjae Lee**</u>

Published

2022.11.17

AWARDS

Top 20 best AI technology 🏆
Nov. 2025
AI Championship hosted by Ministry of Science and ICT, South Korea (on-going competition)

Outstanding Ph.D. Dissertation Award, KAIST 🏆
Feb. 2025
Thesis: Towards Ubiquitous and Intelligent Mobile Computing: From UI Distribution to AI Agent

Minister's Award, Ministry of Science and ICT, South Korea 🏆 ↗
Dec. 2024
Awarded during the 24th Mobile Technology Festival hosted by Korea Economic Daily

CES 2023 Innovation Award 🏆 ↗
Jan. 2023
Received as CTO of Fluiz Corp.

Minister's Award, Ministry of Science and ICT, South Korea 🏆 ↗
Dec. 2022
Awarded during the 22nd Mobile Technology Festival hosted by Korea Economic Daily

MobiCom '19 Best Paper Award 🏆
Oct. 2019
*Awarded to Sangeun Oh, Ahyeon Kim, <u>**Sunjae Lee**</u>, Kilho Lee, Dae R. Jeong, Steven Y. Ko, Insik Shin*

ACADEMIC SERVICE

Program Committee
IUI 2026
External Reviewer
CHI 2026, CHI 2025, IUI 2025

TECHNICAL SKILLS

Programming Languages: Python, Java, C, C++, JavaScript, Context Engineering
Environments/Platforms: Linux, Android Framework, Android Kernel
Languages: Korean (Native), English (Near-native)