Insup Lee

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Research Interests

- AI + Security: AI for cybersecurity/drones, adversarial ML, NLP/LLM for cyber threat intelligence
- Generative Models: diffusion models with transformers, GANs, robustness via data augmentation
- Network and Wireless Security: drones, robust communications, anomaly detection, network IDS

Education

Korea University, Seoul, Republic of Korea — Sep 2019 – Present
Ph.D. Candidate in Cybersecurity

Korea University, Seoul, Republic of Korea — Mar 2014 – Feb 2018
B.E. in Cyber Defense

Employment History

Korea University, Seoul, Republic of Korea — Sep 2025 – Present
Lecturer

Indiana University Bloomington, Indiana, USA — Mar 2025 – Jun 2025
Research Intern

Ministry of National Defense, Republic of Korea — Aug 2023 – May 2025
Security Engineer (Army Captain)

- Led AI-based security projects in the UAE with international colleagues (UAE ambassador's commendation)

Agency for Defense Development (ADD), Seoul, Republic of Korea — Jul 2018 – Jul 2023
Researcher

- Carried out three AI-driven cybersecurity projects, conducting research and in-house software development
  (1) "Detection of Nation-Sponsored Cyber Attacks Using NLP Technologies" (Apr 2021 – Jul 2023)
  (2) "Generative Models for Cybersecurity Data Augmentation" (Jun 2019 – Oct 2020)
  (3) "IPADS: Integrated Proactive and Adaptive Defense Systems" (Aug 2018 – May 2019)

Technical Skills

- Frameworks/Tools: PyTorch, Keras, TensorFlow, scikit-learn, pandas, Git, Streamlit, Docker, GNU Radio
- Programming Languages: Python, C, JavaScript, SQL, PHP, HTML, CSS

Selected Publications

- Insup Lee, Khalifa Alteneiji, and Mohammed Alghfeli, "Enhancing Modulation Classification via Diffusion Transformers for Drone Video Signal Processing," IEEE Signal Processing Letters (SPL), 2025
- Insup Lee and Changhee Choi, "MuCamp: Generating Cyber Campaign Variants via TTP Synonym Replacement for Group Attribution," IEEE Trans. on Information and Forensics Security (**TIFS**), 2025
- Insup Lee and Wonjun Lee, "UniQGAN: Towards Improved Modulation Classification With Adversarial Robustness Using Scalable Generator Design," IEEE Trans. on Dependable and Secure Computing (**TDSC**), 2024
- Insup Lee, and Changhee Choi "Camp2Vec: Embedding Cyber Campaign With ATT&CK Framework for Attack Group Analysis," ICT Express, 2023
- Insup Lee and Wonjun Lee, "UniQGAN: Unified Generative Adversarial Networks for Augmented Modulation Classification," IEEE Communications Letters, 2022
- Insup Lee, Heejun Roh, and Wonjun Lee, "Encrypted Malware Traffic Detection Using Incremental Learning," IEEE INFOCOM - Poster Session, 2020