Sangdon Park

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Google Scholar

Research Interests

Artificial Intelligence (AI), Trustworthy AI, and AI Alignment — My research interest focuses on designing trustworthy AI systems by understanding from theory to implementation and by considering practical applications in computer security, computer vision, natural language processing, robotics, and cyber-physical systems.

Education

University of Pennsylvania — Philadelphia, USA
Ph.D. in Computer and Information Science — 2021

- Advisors: Insup Lee and Osbert Bastani
- Thesis: *Uncertainty Estimation Toward Safe AI*
- Committee: Kostas Daniilidis, Nikolai Matni, Edgar Dobriban, and Kilian Q. Weinberger

Seoul National University — Seoul, Korea
M.S. in Electrical and Computer Engineering — 2012

- Advisor: Kyoung Mu Lee
- Thesis: *Abnormal Object Detection by Transformed-Canonical Scene Generation*

Seoul National University — Seoul, Korea
B.S. in Computer Science and Engineering — 2010

- Thesis Advisor: Byoung-Tak Zhang
- Thesis: *Behavioral Intelligence for Crowd Avatar in 3D Virtual Worlds*

Employment

POSTECH — Pohang, Korea
Assistant Professor — Aug. 2023-Now

Georgia Institute of Technology — Atlanta, USA
Postdoctoral Researcher (Mentor: Taesoo Kim) — Sept. 2021-July 2023

Google Cloud AI — Sunnyvale, USA
Research Intern (Host: Kihyuk Sohn) — Summer 2020

Biointelligence Laboratory, Seoul National University — Seoul, Korea
Undergraduate Researcher — 2008-2010

Republic of Korea Army — Korea
Military Service — 2006-2008

Publications

[1] H. Wang, Z. Yang, **S. Park**, Y. Yang, S. Kim, W. Lunardi, M. Andreoni, T. Kim, and W. Lee, "SOUNDBOOST: Effective RCA and Attack Detection for UAV via Acoustic Side-Channel", in *Proceedings of the 55th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN**)*, 2025.

[2] M. Lee, K. Kim, T. Kim, and **S. Park**, "Selective Generation for Controllable Language Models", in *Neural Information Processing Systems (**NeurIPS**)*, 2024.

[3] S. Li, **S. Park**, I. Lee, and O. Bastani, "TRAQ: Trustworthy Retrieval Augmented Question Answering via Conformal Prediction", in *Annual Conference of the North American Chapter of the Association for Computational Linguistics (**NAACL**)*, 2024.

[4] H. Park, J. Hwang, S. Mun, **S. Park**, and J. Ok, "MedBN: Robust Test Time Adaptation against Malicious Test Samples", in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2024.

[5] W. Si, **S. Park**, I. Lee, E. Dobriban, and O. Bastani, "PAC prediction sets under label shift", in *The Twelfth International Conference on Learning Representations (**ICLR**)*, 2024.

[6] W. Si, S. Li, **S. Park**, I. Lee, and O. Bastani, "Angelic Patches for Improving Third-Party Object Detector Performance", in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2023.

[7] **S. Park**, O. Bastani, and T. Kim, "ACon^2: Adaptive Conformal Consensus for Provable Blockchain Oracles", in *Proceedings of the 32nd USENIX Security Symposium (**Security**)*, 2023.

[8] R. Kaur, K. Sridhar, **S. Park**, Y. Yang, S. Jha, A. Roy, O. Sokolsky, and I. Lee, "CODiT: Conformal out-of-distribution detection in time-series data for cyber-physical systems", in *Proceedings of the 14Th ACM/IEEE International Conference on Cyber-Physical Systems (**ICCPS**)*, 2023.

[9] **S. Park**, X. Cheng, and T. Kim, "Unsafe's Betrayal: Abusing Unsafe Rust in Binary Reverse Engineering via Machine Learning", *arXiv preprint arXiv:2211.00111*, 2023.

[10] **S. Park**, E. Dobriban, I. Lee, and O. Bastani, "PAC Prediction Sets for Meta-Learning", in *Neural Information Processing Systems (**NeurIPS**)*, 2022.

[11] S. Li, **S. Park**, X. Ji, I. Lee, and O. Bastani, "Towards PAC multi-object detection and tracking", *arXiv preprint arXiv:2204.07482*, 2022.

[12] S. Jang, **S. Park**, I. Lee, and O. Bastani, "Sequential covariate shift detection using classifier two-sample tests", in *Proceedings of the 39th International Conference on Machine Learning (**ICML**)*, 2022.

[13] R. Kaur, S. Jha, A. Roy, **S. Park**, E. Dobriban, O. Sokolsky, and I. Lee, "iDECODe: In-distribution equivariance for conformal out-of-distribution detection", in *Association for the Advancement of Artificial Intelligence (**AAAI**)*, 2021.

[14] **S. Park**, S. Li, I. Lee, and O. Bastani, "PAC confidence predictions for deep neural network classifiers", in *International Conference on Learning Representations (**ICLR**)*, 2021.

[15] **S. Park**, O. Bastani, J. Weimer, and I. Lee, "Calibrated prediction with covariate shift via unsupervised domain adaptation", in *International Conference on Artificial Intelligence and Statistics (**AISTATS**)*, 2020.

[16] **S. Park**, O. Bastani, N. Matni, and I. Lee, "PAC confidence sets for deep neural networks via calibrated prediction", in *International Conference on Learning Representations (**ICLR**)*, 2020.

[17] **S. Park**, R. Ivanov, J. Weimer, and I. Lee, "From verification to learning for defense against adversarial examples in neural networks", *Korea Cyber-security Competition*, 2018.

[18] **S. Park**, J. Weimer, and I. Lee, "Resilient linear classification: An approach to deal with attacks on training data", in *International Conference on Cyber-Physical Systems (**ICCPS**)*, 2017.

[19] J. Oh, T. M. Howard, M. R. Walter, D. Barber, M. Zhu, **S. Park**, A. Suppe, L. Navarro-Serment, F. Duvallet, A. Boularias, *et al.*, "Integrated intelligence for human-robot teams", in *International Symposium on Experimental Robotics (**ISER**)*, 2016.

[20] **S. Park**, W. Kim, and K. M. Lee, "Abnormal object detection by canonical scene-based contextual model", in *European Conference on Computer Vision (**ECCV**)*, 2012.

Scholarships and Awards

- Bang Seung-Yang Graduate Fellowship from POSTECH CSE (awardee: Jaewoo Jeong) 2025
- POSTECH GSAI BK21 Best Paper Award 2025
- NeurIPS'24 Spotlight Paper (top 2.08%) 2024
- DARPA AIxCC Finalists as Team Atlanta ($2M Team Prize) 2024
- NeurIPS'23 Outstanding Reviewer Award 2023
- ICML'23 TEACH Workshop Best Paper Award 2023
- ICCPS'23 Best Paper Award finalist 2023
- NeurIPS'21 Outstanding Reviewer Award (top 8% of reviewers) 2021
- Korea cyber-security paper competition Best Paper Award ($4,500) 2018
- PhD fellowship at University of Pennsylvania 2013-2021
- Distinguished MS Dissertation Award at Seoul National University 2012
- Academic Performance Scholarship 2009
- National Science and Engineering Undergraduate Scholarship 2003–2008

Service

- **Area Chair**
  NeurIPS'24-25, ICML'25
- **Reviewer**
  NeurIPS'21-23, ICML'21-23, ICLR'22-24, AAAI'25, Journal of the Royal Statistical Society: Series B
- **External Reviewer**
  S&P'21, S&P'22, Security'22, Security'23, Security'24, NDSS'24

Teaching

- **Instructor** at POSTECH Fall 2023, Fall 2024, Spring 2025
  Trustworthy ML (AIGS703L / CSED703L)
- **Instructor** at POSTECH Spring 2024
  Discrete Mathematics (CSED261)
- **Teaching Assistant** at University of Pennsylvania Spring 2015
  Machine Perception (CIS580)
- **Teaching Assistant** at University of Pennsylvania Fall 2014
  Computer Vision and Computational Photography (CIS581)
- **Teaching Assistant** at Seoul National University Fall 2010
  Linear Algebra for Electrical Systems

- **Instructor** at Seoul National University — Feb. 2008
  1st Free Computer Education for Gwanak-gu Community Youth

Talks

- **Toward Trustworthy Large Language Models**
  PKNU AI — Dec. 2024
  POSTECH AI Day — Dec. 2024
- **Rethinking and Harnessing Trustworthiness of Generative AI for Security**
  Samsung Security Tech Forum (SSTF) – *Invited Talk* — Sep. 2024
- **Trustworthy Military-AI: AI Controllability**
  REAIM — Sep. 2024
- **Trend on Trustworthy Language Models**
  National Statistics Development Forum — Sep. 2024
- **Trustworthy AI: A Compositional Perspective**
  POSTECH AI/CSE — April 2024
- **Conformal Prediction for Trustworthy AI**
  Korean AI Association Winter School — Feb. 2024
- **Uncertainty Learning for Trustworthy and Secure AI**
  POSTECH AI/CSE — Mar. 2023
  KAIST EE — April 2023
  SNU CSE — April 2023
  Korea University CSE — July 2023
  SNU IPAI — July 2023
  SNU Frontier Summer School — Aug. 2023
  UNIST IB — Oct. 2023
  KAIST — Jan. 2024
  CAU AI — May 2024
  Korea GSS — June 2024
- **PAC Prediction Sets for AI Safety**
  ICML Workshop DFUQ 2022 – *Invited Talk* — Jul. 2022
- **Uncertainty Quantification via PAC Prediction Sets**
  DGIST — Dec. 2021
- **From Verification to Learning for Defense against Adversarial Examples in Neural Networks**
  KAIST CS — Aug. 2018
  Hanyang University — Aug. 2018
  KIISC — Aug. 2018