KIJIN AN

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(a) Education

2015.8–: Ph.D. Candidate, **Virginia Tech**, Computer Science, Blacksburg, VA
Advisor: Prof. Eli Tilevich, https://people.cs.vt.edu/~tilevich
Dissertation Title: "The Client Insourcing Refactoring and Its Applications to Optimizing and Enhancing Distributed Execution," *Committees: Godmar Back, Francisco Servant, Xun Jian, Walter Binder (Univ. of Lugano)*

2007.3–2009.2: M.S., **POSTECH**, Computer and Communication, Pohang, South Korea
Advisor: Prof. Hwangjun Song, *Multimedia Computing and Networking* lab, https://mcnl.postech.ac.kr

2003.3–2007.2: B.E., **University of Seoul**, Electrical and Computer Engineering, Seoul, South Korea

(b) Research Keywords

Refactoring/Optimizing Distributed Systems, Software Engineering, Web Engineering, Multimedia Networking, Robotics

(c) Employment and Projects

2007.3–2009.2: **GRA**, Multimedia Computing and Networking lab, POSTECH, South Korea
I implemented MAC and routing stacks for Sensor Network such as *802.15.4*, *AODV* over the *Ptolemy* framework (07.3-07.12, DGIST, UC Berkeley). Based on successful completion of this work, I implemented Location Recognition system over multiple base stations by using *Ptolemy* framework again (08.5-08.12, DGIST).

2009.5–2012.9: **Engineer/Assistant Manager**, SK telesys, Pankyo, South Korea (Military Duty)
I was a system Engineer for developing 3·4G communications equipment. (Tested MAC/Routing protocols)

WiBro Base-station (19.5-19.12, SK telecom), Ethernet Inbuilding System–eIBS (10.4-11.1, SK telecom), WiFi-IPPBX–WIP-300 (11.3-11.10, SK telink), 4G RF/Optic repeaters–MiBoS&TRIO-LM (11.12-12.09, SK telecom)

2012.9–2015.8: **Researcher**, Robotics Research, KIST, Seoul, South Korea
SimonPiC: This project aims for a robot's simultaneous interaction with many students in a classroom environment. To overcome a limited ability of the robot, we developed an ambient distributed vision system that networks many heterogeneous sensors and fuses their individually detected information. I mainly developed sensor fusion algorithms for reliably identifying multiple humans' information of *where*, *who*, and *what* based on sensors such as RGB-Ds, PTZ CAMs, a Laser Sensor and even mic-phone array. The government awarded this project as *18th Industry Technology of this Month*. I was project manager from 1^{st} to 4^{th} years, in charge of implementing the core system and leading demos. I published ten research papers.
http://www.robot-intelligence.kr/index.php/3W_for_HRI

2015.8–now: **GTA/GRA**, Department of Computer Science, Virginia Tech, Blacksburg, VA
Understanding Heap-Spraying Attacks: I developed a core course project for VT CS2506. This is a distributed system for operating a victim server based on *V8*.
http://courses.cs.vt.edu/cs2506/Spring2018/C/HS/handout.pdf

RT-Trust: I participated in the project for developing tools to automate distributing embedded applications (e.g. drone firmware *PX4*) to support *optee-os*/*SGX* Environments.

(d) Skills

Programming: JavaScript, Java, Python, C/C++, Datalog, SQL
Package: V8, z3, angular/cordova, LLVM, optee-os, tensorflow.js, ROS, Blender, PCL, Ptolemy, ns-2
Hareware: rpi, Android/iOS, turtlebot, Kinect/Hokuyo, PSA/RF signal generator

(e) Publication

1. **Kijin An** and Eli Tilevich, We are going to submit one work of Edge Computing to NSDI 2021.
2. **Kijin An** and Eli Tilevich, We submitted a Mobile-specific distributed system to Infocom 2021.
3. **Kijin An** and Eli Tilevich, "Client Insourcing: Bringing Ops In-House for Seamless Re-engineering of Full-Stack JavaScript Applications," *Proceedings of the Web Conference (WWW)*, April 2020. (**19%, 217/1129**).
4. **Kijin An**, "Enhancing Web App Execution with Automated Reengineering," *Proceedings of the Web Conference (Dotoral Symposium WWW)*, April 2020.
5. **Kijin An** and Eli Tilevich, "D-Goldilocks: Automatic Redistribution of Remote Functionalities for Performance and Efficiency," *Proceedings of the 27th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2020)*, February 2020. (**21%, 42/199**)
6. Yin Liu, **Kijin An**, and Eli Tilevich, "RT-Trust: Automated Refactoring for Different Trusted Execution Environments under Real-Time Constraints," *Journal of Computer Languages (COLA)*, Accepted for Publication, **Journal Article**.
7. **Kijin An** and Eli Tilevich. "Catch & Release: An Approach to Debugging Distributed Full-Stack JavaScript Applications", *19th International Conference on Web Engineering (ICWE 2019)*, June 2019. (**25%, 26/106**)
8. **Kijin An**, "Facilitating the Evolutionary Modifications in Distributed Apps via Automated Refactoring," *19th International Conference on Web Engineering (Doctoral Symposium ICWE 2019)*, June 2019.
9. Yin Liu, **Kijin An**, and Eli Tilevich, "RT-Trust: Automated Refactoring for Trusted Execution Under Real-Time Constraints," *Proceedings of the 17th International Conference on Generative Programming: Concepts & Experience (GPCE 2018)*, Nov 2018.
10. **Kijin An**, Na Meng, and Eli Tilevich, "Automatic Inference of Java-to-Swift Translation Rules for Porting Mobile Applications," *MobileSoft*, 2018, **Nominated for a best paper award**.(6%, 3/52)

    (*Robotics Research at KIST*)
11. **Kijin An**, Geunjae Lee, Sang-Seok Yun, and JongSuk Choi, "Multiple Humans Recognition of Robot Aided by Perception Sensor Network," *URAI 2015*.
12. Geunjae Lee, **Kijin An**, Sang-Seok Yun, and JongSuk Choi, "A Simultaneous Robot Service Scheme for Multi-Users," *In. Proc. Int. Conf. Ubiquitous Robots and Ambient Intelligence (URAI)*, pp. 373-374, Oct. 2015.
13. Anh Vu Le, **Kijin An** and JongSuk Choi, "Multiple Human Tracking on Robot Operation System," In. Proc. Int. Conf. Ubiquitous Robots and Ambient Intelligence (URAI), Oct. 2015.
14. **Kijin An**, Hyeon-woo Park and JongSuk Choi, "Reliable Fusion method of multiple Human information over a Heterogeneous Sensor Network," *IEEE RO-MAN*, 2015. (extended abstract)
15. Anh Vu Le, **Kijin An** and JongSuk Choi, "Group-based multiple people tracking in perception sensor network," *IEEE RO-MAN*, 2015. (extended abstract)
16. JiGwan Park, **Kijin An**, and JongSuk Choi, "Low-Body-Part Detection using RGB-D camera." *Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction(HRI)*, Extended Abstracts. ACM, 2015. (video presentation)
17. **Kijin An**, JiGwan Park, Minh Do Hoang and JongSuk Choi, "Dispensing Materials of mobile Robot cooperating with Perception Sensor Network," URAI 2014.
18. JiGwan Park, **Kijin An**, and JongSuk Choi, "Realistic 3D simulation of multiple human recognition over Perception Sensor Network," *ROMAN*, 2014.
19. JiGwan Park, **Kijin An**, Daijin Kim and JongSuk Choi, "Multiple Human Tracking using Multiple Kinects for an Attendance Check System of a Smart Class," *URAI*, 2013. (video presentation)
20. **Kijin An**, JongSuk Choi, "A 3D Simulation Approach for Multi-human Detection using a Multi-sensor frame," *ROMAN*, 2013.

(*Multimedia Networking Lab at POSTECH*)

21. Wan Kim, Hyunchul Joo, **Kijin An**, Inkyu Lee, and Hwangjun Song, "Urgency-based scheduling and routing algorithms for delay-sensitive data transmission over mobile ad hoc networks," *ACM/Springer Wireless Networks*, Vol. 19, No. 7, pp. 1595-1609, 2013. (**Master thesis**, **Journal Article**)

22. Wan Kim, Hyunchul Joo, **Kijin An**, and Hwangjun Song, "A novel packet urgency metric-based cross-layer design for video streaming over multi-rate MANETs," *IIWCMC* 2013.

23. Hyunchul Joo, **Kijin An**, and Hwangjun Song, "Urgency-based Packet Scheduling and Routing Algorithms for Video Transmission over MANETs," *CCWMC* 2011.

24. **Kijin An** and Hwangjun Song, "An effective cross-layer packet scheduling and routing algorithm for delay-sensitive media transmission over MANET," *International Conference on Communications (ICC)*, 2009.

(f) Teaching and Services:

- GTA for CS2505 and CS2506 in CS@VT (Two lecture sessions for *Understanding Heap Spraying*)
- External Reviewer for TSE 2018, ECOOP 2020, RO-MAN 2020, MPLR 2020
- President for Korean Computer Scientists (KCS) in CS@VT (2019.6 - now)