Kim Sol

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Interest

- Safety of scalable—code and performance—programs.
- Scalable and compositional frameworks, reactive programming, and others.
- Program reasoning methods, abstract interpretation, software verification.

Experience

SOFTWARE DEVELOPER, FURIOSA - 2019.2-PRESENT

Developed and maintained tools, software, services to implement deep learning acceleration chips.

- Designed and developed software kit for AI accelerators including a compiler, profiler, and other tools.
- Developed and maintained a compiler that compiles target deep learning model into binary which is run on our AI accelerators.
- Designed and developed a profiler that profiles AI accelerators.
  Used skill set: Rust, C++, Python, Javascript, React, d3, Material-UI

- Participated as a member of MLPerf Submission Working Groups (https://mlperf.org)
- Attended working group meetings of MLPerf to submit a FPGA version of benchmark results.
- Contributed to MLPerf inference submissions, LoadGen and others. https://arxiv.org/abs/1911.02549
  Used skill set: Hangout, Google Groups, GitHub, C++, Python

- Composed administration environments, and software of the company.
- Developed and maintained main webpage (https://furiosa.ai)
- Composed authentication & authorization environments of Amazon AWS based on G Suite accounts.
  Used skill set: Javascript , React, D3, Material-UI, AWS

SOFTWARE DEVELOPER, NHN ENTERTAINMENT – 2015.3-2019.1

Developed and maintained infrastructure management platforms.

- Designed and developed a multi-tenant Salt Stack coordination system using Kubernetes to isolate the entire Salt Stack environment tenant by tenant.
- Developed and maintained a software-defined massive server management system based on Salt Stack. The system has been used to manage 10K+ servers.
- Contributed major and minor issues for Salt Stack and RxPY through GitHub.
- Provided formal verification using Coq to guarantee crucial logics run correctly. Defined specifications and verified it by abstracting and minimizing the original logics.
  Used skill set: Python, Tornado (Python async framework), MongoDB, RxPY, RESTful API, Coq, Kubernetes

- Developed and maintained RDBMS database configuration management system. The system has been used to manage schema of RDBMS tables.
- Designed IR and implemented translators of the IR to support managing RDBMS database schema. The translator translates between DDL SQL and IR, IR and RDBMS database schema (and the schema are represented as Java objects).
  Used skill set: Java, General SQL Parser, Spring, RxJS, MySQL, RESTful API, Scala

- Developed and maintained a system that gathers and analyzes security-related information to find vulnerable points for 10K+ servers.
- Developed and maintained an agent, which is implemented by Go, to gather security-related information. Compromising the agent to run with low-level resource uses to prevent influencing processes of clients is one of the major requirements.
  Used skill set: Go, Kafka, HDFS

- Developed and maintained server configuration management system (CMDB), the system has been used to manage 10K+ servers.
  Used skill set: Java, Spring, MySQL, RESTful API

RESEARCH ASSISTANT, RESEARCH ON SOFTWARE ANALYSIS FOR ERROR-FREE COMPUTING – 2013.3-2015.2

Researched and studied about abstract interpretation and program reasoning methods.

- Researched methods to enhance the precision and performance of the widening of abstract interpretation.
  Used skill set: OCaml, Abstract Interpretation

- Researched methods to analyze obfuscated x86 binaries using abstract interpretation.
  Used skill set: OCaml, Abstract Interpretation, BAP (Binary Analysis Platform)

Education

SEOUL NATIONAL UNIVERSITY – 2013.3-2015.2

Master of Electrical Engineering and Computer Science
Advisor: Prof. Kwangkeun Yi

HANYANG UNIVERSITY – 2009.3-2013.2

Bachelor of Computer Science and Engineering

Publication

- Widening with Thresholds via Binary Search
  Sol Kim, Kihong Heo, Hakjoo Oh, and Kwangkeun Yi
  SP & E: Software-Practice and Experience, 46(10), 2016
  [pdf]

Talk

- Asynchronous Programming in Python with Salt Stack (tornado), and RxPY. PyconKR 2017. 2017. 8. 13. [slides]

Article

- Asynchronous programming and web frameworks. 2016. 10. 6 [pdf]

Skill

PROGRAMMING LANGUAGES
- **Proficient:** OCaml, Java, Python
- **Familiar:** Scala, JavaScript, Objective C, Go, Coq, C

FRAMEWORKS
- Abstract Interpretation, Spring, Django, Tornado (Python async framework), Reactive Programming (RxPY, RxJS), RESTful API, MySQL, MongoDB

Project & Activity

SOFTWARE DEVELOPER, ANALYZER-GITHUB-CI – 2016.6-2018.12
- Developed and maintained a static analysis CI service, especially, targeted to integrate FB Infer and GitHub. the system has been used, unofficially, to analyze 15+ projects in NHN Entertainment.
  Used skill set: Scala, Play Framework, React

SOFTWARE DEVELOPER, AROUND – 2012.12-2016.12

Developed and maintained RESTful API servers & iOS & web applications.
- Developed a mobile web service to find and evaluate toilets around user's location.
  Used skill set: Python, Django, RxJS, React, Redux, Redux-Observable
- Developed a iOS application to find restaurants around user's location.
  Used skill set: Objective C (iOS application), C# (web server)

Led a CERT-student club of Hanyang University.
- Executed and directed penetration tests regularly for servers and web services of Hanyang University. The penetration tests are permitted and supervised by Infrastructure Management Team of Hanyang University.
- Organized the hacking conference Incognito with 10+ other universities.
- Participated as a member of KUCIS (Korea University Clubs in Information Security) program, which is hosted by KISA (Korea Internet and Security Agency).

Honor & Award

- SamSung Championship Software Competition, third prize, Samsung SDS – 2013.1
- Debate of Privacy Protection Law, second prize, Ministry of the Interior and Safety of Korea – 2012.7