

Kim Sol

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Interest

- Computation of deep neural network models, e.g. compiler, runtime environments, and tools of DNN models.
- Safe & Scalable high performance backend systems, e.g. Reactive Programming, Salt Stack, and others.
- Static Program analysis methods, e.g. abstract interpretation, software verification.

Experience

SOFTWARE DEVELOPER, FURIOSA - 2019.2-PRESENT

Developed and maintained tools, software, services to implement AI acceleration coprocessors.

- Architected multi-cluster development and service environments using service mesh and Kubernetes. Established safe communication channels using mTLS over public network between clouds.
- Designed and managed to use the asme SSO (along with authn & authz) for all infrastructures, services, and clusters (on-premise, public clouds) through appropriate interfaces.
- Migrated legacy CI/CD systems, architected multi-cluster CI/CD systems using Kubernetes and service mesh.
- Introduced BeyondCorp to company, and got rid of VPN.

Used skill set: Rust, Python, Typescript, Kubernetes, Istio, Envoy, GCP, AWS, OIDC

- Designed and developed SDK for AI chips, and participated architecting the chips.
- Participated in designing and developing compiler in general, e.g. code generation, profiling features, testing features, and others.
- Designed and implemented various tools, e.g. tensor visualization & comparison, compilation reports, ..., to make customers use our AI chips conveniently.

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: C++, Python

- Designed administrative environments and software, e.g. TOTP based system account managements page, ...
- Developed and maintained main webpage (<https://furiousa.ai>)
- Designed & implemented authentication & authorization environments of Amazon AWS based on G Suite accounts.
- Designed and developed an internal portal site, Citadel, hosted various internal information.

Used skill set: Python, Typescript, React, d3, Material-UI, Tornado, AWS, OIDC

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.

Used skill set: Python, Tornado (Python async framework), MongoDB, RxPY, RESTful API, 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

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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:** Rust, Java, Python, OCaml, TypeScript
- **Familiar:** Go, Scala, Objective C, 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)

LEADER, CERT-STUDENT OF HANYANG UNIVERSITY – 2012.3-2013.2

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