

# Heungsub Lee

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Web Sites

[subl.ee](http://subl.ee), [github.com/sublee](https://github.com/sublee), [linkedin.com/in/sublee](https://linkedin.com/in/sublee)

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## Interests

- Parallel and distributed deep learning
- Developing and documenting API for engineers
- Free and open-source software

## Skills

Programming Languages

Python (expert), Go, Bash, C#, JavaScript

AI Research

PyTorch, NVIDIA Nsight Systems, pipeline parallelism

Back-end Development

Linux, AWS, Terraform, Docker, ZeroMQ, Redis, Couchbase,

MySQL, etcd

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## Work Experience

Software Engineer

**Kakao Brain**, 2018–

An AI laboratory in Kakao.

Develop a distributed hyperparameter search platform.

Reproduced **GPipe** in PyTorch to boost the training performance of large deep learning models. This project was published as [torchgpipe](#).

Game Server Engineer & Architect

**Nexon**, 2011–2018

Developed and launched Durango, [KartRider](#) Dash & Coin Rush.

Designed and developed cloud-based distributed game servers for Durango (MMORPG) and [KartRider](#) Dash & Coin Rush (online racing games) respectively. Durango achieved up to 70k concurrent users per game world.

Developed an internationalization and localization system focused on linguistic features of Korean and Indo-European languages.

Researched rating systems such as Elo, Glicko, and [TrueSkill](#) to develop a matchmaker.

Managed a server engineering team including 15 engineers.

Web Developer

**Npine**, 2008–2011

Supplies stock images for business on [Iclickart](#).

Developed and maintained web services from scratch. Maintained on-premise Linux servers.

Front-end Web Developer

**Lunant**, 2008–2011

Served a social media named VLAHH.

Designed and implemented the UI/UX for a social media.

Developed [jDoctest](#) which is an open-source JavaScript testing framework inspired by Python's doctest.

## Open Source Experience

**torchgpipe**, 2019–

A GPipe implementation in PyTorch.

Implemented **GPipe** in PyTorch. GPipe is a scalable pipeline parallelism library for the training of a giant model. The story behind this project can be found on [Kakao Brain Blog](#)<sup>ko</sup>.

Optimized the pipeline parallelism and checkpointing for CUDA and PyTorch's autograd engine.

**Hangulize**, 2010–

Automatically transcribes a non-Korean word into Hangul.

Implemented an automatic Hangul transcription algorithm to realize [Brian Jongseong Park's idea](#). By origin, it was written in Python, but rewritten in Go for better features, performance, and productivity.

Designed and implemented the web service and RESTful API. Many professional Korean translators habitually visit here to translate undocumented proper nouns. For example, Ryu Gwang, who is a technical translator, introduced Hangulize in [his posting](#)<sup>ko</sup>. Netflix also refers to it in [the Korean timed text style guide](#).

**TrueSkill**, 2012–

A TrueSkill™ implementation in Python.

Implemented **TrueSkill™**, which is a rating algorithm for Xbox Live, in Python with a handy interface. This project was introduced in [PyData Berlin 2019](#).

**Profiling**, 2014–2018

An interactive profiler for Python inspired by the Unity3D profiler.

Developed a Python profiler with an interactive TUI inspired by [the Unity profiler](#).

On GitHub, this project has been starred by 2.9k people. Also, it was the 3rd daily trending repository on Sep 22, 2014.

Others

- **Tossi** – A utility for Korean allomorphic particles.
- **Flask-AutoIndex** – `mod_autoindex` for [Flask](#).
- **SUBLEERUNKER** – A simple parody game of SUBERUNKER. Play it in your web browser.
- **Me2virus** – An XSS attack on a social media named [Me2day](#). When a user looks at an infected post, a new infected post was written on the user's wall.

Contributions

- For [PyTorch](#), fixed potential GPU memory violation ([#27371](#)); deprecated inconsistent API ([#21006](#), [#25985](#)); discussed a counterintuitive behavior of the autograd engine ([#18568](#)).
- For [ZeroMQ](#), discussed a PUB socket crash ([#2942](#)).
- For [Flask](#), fixed a bug to generate URL with a subdomain ([#108](#)).
- For [jQuery 1.4.3](#), restored a missing part of the content negotiation header for Ajax.

## Publications

- C. Kim\*, [H. Lee\\*](#), M. Jeong, W. Baek, B. Yoon, I. Kim, S. Lim, S. Kim. "torchgpipe: On-the-fly Pipeline Parallelism for Training Giant Models". [arXiv preprint arXiv:2004.09910](#). (2020)

\*Contributed equally.

## Public Speeches

- [Remake of Hangulize](#)<sup>ko</sup> at Golang Korea 2018 and Naver D2
- [Server architecture of Durango Vol. 3](#)<sup>ko</sup> at NDC 2018
- [Python Survival Guide](#)<sup>ko</sup> at Nexon Talk 2016
- [Server architecture of Durango Vol. 2](#)<sup>ko</sup> at NDC 2016
- [Profiling](#)<sup>ko</sup> at PyCon KR 2015
- [Server architecture of Durango](#)<sup>ko</sup> at NDC 2014

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## Languages

- Korean – native
- English – conversational

## Education

Computer Software, [Kwangwoon University](#), 2008 – Completed the first year only.