Heungsub Lee

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Web Sites
subl.ee, github.com/sublee, linkedin.com/in/sublee

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

Work Experience

Software Engineer
Kakao Brain, 2018–
An AI laboratory in Kakao.

Develop an AutoML system.

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 VLAAH.

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[ko].

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[ko]. 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[ko] at Golang Korea 2018 and Naver D2
- Server architecture of Durango Vol. 3[ko] at NDC 2018
- Python Survival Guide[ko] at Nexon Talk 2016
- Server architecture of Durango Vol. 2[ko] at NDC 2016
- Profiling[ko] at PyCon KR 2015
- Server architecture of Durango[ko] at NDC 2014

Languages

- Korean – native
- English – conversational

Education

Computer Software, Kwangwoon University, 2008 – Completed the first year only.