Last Updated: Jun 2nd, 2022
Tokyo, Japan
masashi.sode@gmail.com

Masashi Sode

AI Engineer at Aillis, Inc.

Portfolio
github.com/MasashiSode
linkedin.com/in/masashisode

Education

Master of Engineering in Aerospace Engineering **Mar 2019**
Graduate School of Engineering, Tohoku University (www.tohoku.ac.jp), Sendai, Miyagi, Japan *GPA 4.0/4.0*

Bachelor of Science in Engineering **Mar 2017**
Faculty of Engineering, Tohoku University, Sendai, Miyagi, Japan *GPA 3.6/4.0*

Skills

Research skills:	**Medical AI development**, Machine learning, Deep learning, **Multi-modal deep learning** (image, table, graph structure) **High-performance computing** (Advanced) Mathematical optimization, Numerical simulation, Bayesian optimization
Programming:	**Python (Advanced)**, Fortran (Advanced), C (Intermediate), C++ (Intermediate) Rust (Basic), TypeScript (Basic)
Framework:	**PyTorch (Advanced)**, FastAPI, Django, React, etc.
Platform:	**Linux (Advanced)**, Windows (Intermediate)
Writing tools:	LaTeX(Advanced, this CV is written by LaTeX), MarkDown (Advanced)
Other tools:	Git, Github, Slack, Google/Microsoft software suites, etc.
Communication:	Japanese (native), English (fluent speaker), German (fluent speaker)

Work/Research Experience

AI Engineer / Developing an influenza diagnosis method from pharyngeal images using deep learning **Oct 2019 — Present**
Aillis, Inc. (www.aillis.jp) (Startup company) *Tokyo, Japan*

- As a key developer and researcher on the AI team, I led the AI team from prototyping to commercialization of influenza diagnosing AI in a startup company. Through working closely with physicians, hardware team, and software/AI team as a collaborative research project, the project was successfully completed from prototyping to clinical trial in a short period.
- The influenza diagnosing AI predicts influenza infection from pharyngeal images and clinical information using multi-modal deep learning. I proposed and developed a number of significant methods and integrated the ideas into the multi-modal medical AI for the clinical trial.
- Our collaborative team conducted a clinical trial and the medical AI system received pharmaceutical approval (Japanese press release link) in Japan in April 2022. This is the first time a prospective study of an AI medical device has been conducted in Japan. For reference, only four products among the 130 AI medical devices are approved by the U.S. FDA as of April 2022.
- I developed the AI model using the supercomputer ABCI (https://abci.ai/) from the National Institute of Advanced Industrial Science and Technology. This supercomputer has a world-leading computational processing power of 550 AI-PFLOPS with 4,352 NVIDIA V100 GPUs.

Software Engineering Intern / Developed a console device to collect influenza patient data **Jul 2019 — Oct 2019**
Aillis, Inc. (www.aillis.jp) (Startup company) *Tokyo, Japan*

- I led the data collection stage as a developer for developing the influenza diagnosis AI. I mainly developed a console device to collect patient data in medical institutions for clinical research in Japan.
- With the device I developed, clinical research is conducted in Japan in 2019 and more than 10,000 patients and 500,000 pharyngeal images are collected from about 100 medical institutions to build a unique pharyngeal database.

AI Engineering Intern / Sleep stage classification from EEG signal using deep learning **Apr 2019 — Jul 2019**
PGV Inc. (www.pgv.co.jp) (Startup company) *Tokyo, Japan*

- I supported developing sleep stage classification AI models from EEG signals and surrounding software.

Leading Position of Research Team / Aircraft Design using multi-objective Bayesian optimization **Apr 2015 — Mar 2019**
Tohoku University (bachelor to master) *Miyagi, Japan*

- Conducted the research on multi-objective Bayesian optimization for composite aircraft design under the supervision of Professor Okabe (research topic of bachelor and master theses). I led the collaborative research with Kawasaki Heavy Industries, Toray Industries, and three aerospace engineering laboratories.
- To create the automated aircraft design method, the Genetic Algorithm, multi-objective Bayesian Optimization with Gaussian process (github.com/MasashiSode/MOBO), Finite Element Method (FEM, written in C lang), Computational Fluid Dynamics (CFD, written in Fortran), and the fluid-structure interaction method are integrated into a Python library with a high-performance computation environment in Linux.

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Accomplishments

Publications

One co-authored publication relevant to the influenza diagnosis AI developed in Aillis, Inc. is under submission.

Patents

I am the inventor of **three patent applications** relating to the influenza diagnosing AI system in Aillis, Inc. However, the application numbers and contents of inventions cannot be disclosed due to the current contract with the company.

Conference Presentations

1. **M. Sode**, N. Ishiura, Y. Nagumo, T. Okabe, Aero-Structural Optimization of a Regional Jet Wing with Failure Criterion, 33rd New Materials Engineering Conference, Fukushima, Japan, 5 - 7 Sep. 2017
2. **M. Sode**, N. Ishiura, Y. Nagumo, T. Okabe, Aero-Structural Optimization of an Aircraft Wing with Failure Criterion, 42nd Composite Material Symposium, Miyagi, Japan, 14 – 15. Sep. 2017
3. **M. Sode**, N. Ishiura, Y. Nagumo, T. Okabe, Multidisciplinary Optimization of Regional Jet Wing, 55th Aircraft Symposium, Shimane, Japan, 20 - 22. Nov. 2017

Major Awards

1. **First Prize: PyTorch Global Summer Hackathon 2020 (https://pytorch.org/blog)** **Jun 2020 — Aug 2020**
   First place developing a python library to mitigate the unfairness in machine learning using constrained optimization.
2. **Grant: Boeing Higher Education Program 2016 (www.ifs.tohoku.ac.jp)** **2016**
   Tohoku University participated in Boeing Higher Education Program and awarded Grant from The Boeing Company to bring up excellent scientists and engineers who should carry the world's future. I developed an aircraft design method with aero-structural optimization through this grant and integrated it into a Python library.

Teaching Experience

1. **Mathematics for Engineering Class Tutor** **Apr 2017 — Aug 2017**
   Tutored first-year undergraduate students in math for engineering using math exercises.
2. **Aircraft Design Class Tutor** **Apr 2016 — Aug 2016**
   Tutored first-year undergraduate students in general knowledge of aircraft design.

Community Service

1. **AFS Intercultural Program Volunteer** **Apr 2013 — Mar 2019**
   AFS Intercultural Programs, Japan (www.afs.or.jp) *Japan*
   - AFS Intercultural Programs (or AFS, originally the American Field Service) (https://afs.org) is an international youth exchange organization that has provided intercultural learning opportunities through high school student exchange programs to help people understand different cultures since 1914.
   - I studied abroad in Germany in high school for a year (Feb 2011 – Jan 2012) through this organization.
   - Supported the international exchange students and Japanese high school students by organizing the exchange program.
2. **Program Head of AFS International Camp** **Jan 2018 — Aug 2018**
   AFS Intercultural Programs, Japan (www.afs.or.jp) *Japan*
   - Organized the international camp of AFS for high school students and exchange students.
3. **IPLANET Tutor** **Apr 2014 — Mar 2017**
   Tohoku University *Miyagi, Japan*
   - Supported exchange students at Tohoku University.

Hobby

- Attending Kaggle competition
- Attending hackathon for learning something new
- Electronics (making a head up display)
- Playing guitar
- Nature observation
- Reading