Tomoaki Kobayashi

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EDUCATION

Tohoku University   Sendai, Japan
Bachelor of Engineering in Computer Science   *Apr. 2018 – Present*
Major GPA: 3.71/4.0

Obtained **the best grades** in many subjects including:
- Practice of Information Processing (introduction to Unix & C), Programming A (programming in C), Programming B (programming in Java & Standard ML)
- Automata and Formal Languages, Algorithms and Data Structures, Information Mathematics (discrete math), Exercises in Foundations for Computer Science (automata, algorithms, & graph/set theory exercises)
- System Software Engineering (OS & distributed systems), Compiler, Database, Numerical Analysis, Network Computing, Machine Learning in Practice
- Fundamentals of Computer (logic circuits & Boolean algebra), Fundamentals of Computer Software (formal syntax & semantics of programming languages), Logic for Computer Science (predicate logic & natural deduction), Information and Communication Theory, Artificial Intelligence
- Team-based Engineering for Invention (developed an emulator of the NES CPU & PPU in Standard ML, github.com/moatom/nesmlSharp)

Participated in extracurricular activities including:
- Step-QI school (started to be involved in research on stream processing)
- TEA's English Program of Academic English for Spring Intensive 2020 (A program for the university students to learn English, Grade: 96/100)

PUBLICATIONS

T. Kobayashi and O. Kiselyov. **Highly Purifying Stream Fusion**. In *Proceedings of the 37th JSSST Annual Conference*, JSSST 2020, Sept. 2020a *(in Japanese)*.
- Propose an efficient stream processing library which fully supports a wide range of combinators: mapping, filtering, accumulative-mapping, zipping, and flat-mapping of finite/infinite streams
- Completely fuse (optimize) any combination of the combinators by generating imperative codes from the streaming pipelines
- Guarantee the generated codes' safety

PRESENTATIONS

T. Kobayashi and O. Kiselyov. **Highly Purifying Stream Fusion**. The 37th JSSST Annual Conference, Sept. 2020b *(in Japanese)*.

T. Kobayashi and O. Kiselyov. **Highly Purifying Stream Fusion**. The 22nd JSSST Workshop on Programming and Programming Languages, Mar. 2020c *(poster, in Japanese)*.

HONORS AND AWARDS

Distinguished Presentation Award. The 37th JSSST Annual Conference, Sept. 2020b.

RESEARCH INTERESTS

1. programming languages, domain-specific languages
2. functional programming, multi-stage programming, stream processing
3. code generation, optimization

TECHNICAL SKILLS

Programming Languages
(BER Meta)OCaml, C, Python 3, Scala 3, Unix shell

Tools
Make, Git, LaTeX, Gnuplot