

Fengyun Liu

Types, Effects, Logics, Languages

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Academic Interests

Interests type systems, effect systems, programming paradigms, logics, concurrency

Education

- 2016.9– present **PhD in Computer Science**, *École Polytechnique Fédérale de Lausanne*, Switzerland.
Research focus on effect systems, compiler construction, macro systems.
- 2014.9– **Master in Computer Science**, *École Polytechnique Fédérale de Lausanne*, Switzerland.
2016.2 Study in foundation of software, advanced compiler construction, software verification and synthesis, distributed and concurrent algorithms, TCP/IP networks, information security, big data.
- 2007.9– **Master in Western Philosophy**, *Nanjing University*, Nanjing, China.
2010.6 Study in logic, philosophy of language, philosophy of mind, ethics, history of philosophy.
- 2003.9– **Bachelor in Software Engineering**, *Nanjing University*, Nanjing, China.
2007.6 Study in mathematics, algorithms, computer architecture, computer networks, operating systems, database systems, software design, software engineering.

Current Projects

- Dotty **The new Scala compiler.**
- Gestalt **A portable macro system for Scala.**
- Stoic **Capability-based calculus for effects and security.**

Publications

- 2016.9 **A generic algorithm for checking exhaustivity of pattern matching**, *F. Liu*, SCALA 16.
- 2016.2 **A study of capability-based effect systems**, *F. Liu*, master thesis, EPFL.

Passed Projects

- 2015.9– **A Capability-based Effect System**, *Master Thesis*, LAMP/EPFL.
Present
 - Developed an effect calculus based on System F to solve the problem of *effect polymorphism*
 - Proved soundness and effect safety in Coq
- 2015.2– **Software Dependency Management via SAT Solvers**, *Semester Project*, LAMP/EPFL.
2015.6
 - Prototyped a dependency resolver for Ivy and Maven eco-systems in Scala based on Sat4j

Work Experience

- 2016.3– **Intern**, *LAMP, EPFL*, Lausanne, Switzerland.
2016.9 Implement a new exhaustivity checking algorithm for Dotty – the new Scala compiler
- 2015.7– **Intern**, *Bühler Group*, Uzwil, Switzerland.
2015.9 A language parser based on parser combinators and language visualization based on ladder diagram.
- 2011.7– **Full-stack Ruby on Rails Web Developer**, *Freelancer*, Nanjing, China.
2014.8 Various web projects from both front-end to backend, from product ideas to deployment.

2010.7– **Software Engineer**, *Fujitsu-Nanda Software Tech Inc.*, Nanjing, China.

2011.6 Ruby on Rails web development related to Fujitsu IaaS cloud computing management platform.

Developer Skills

Domains web development, computer networks, information systems, micro-controllers, FPGA

Aspects distributed systems, concurrent programming, functional programming, OOP, database