EÖTVÖS LORÁND UNIVERSITY

FACULTY OF INFORMATICS

Thesis Registration Form

Student's Data:

Student's Name: Xie Zongpu

Student's Neptun code: RLKNMA

Course Data:

Student's Major: Computer Science BSc

I have an internal supervisor

Internal Supervisor's Name: *Kovács András*

Supervisor's Home Institution: *Eötvös Loránd University*

Address of Supervisor's Home Institution: *1053 Budapest, Egyetem tér 1–3.*

Supervisor's Position and Degree: *PhD Student*

Thesis Title: A functional programming language based on dependent type theory

Topic of the Thesis:

(Upon consulting with your supervisor, give a 150-300-word-long synopsis os your planned thesis.)

For the thesis, a functional programming language based on dependent type theory will be implemented in Haskell. The software will contain the definition of the language with a type checker and an interpreter.

The first part of the program is lexical and syntactic analysis. This will be implemented with the help of the monadic parser combinator library called Megaparsec.

The next part is semantic analysis, which uses type checking and type inference to check if a term is well-typed. Due to the dependent type system, terms can appear in types as well, thus type checking involves evaluation of certain parts of the program. The language can contain holes and implicit arguments, which can be inferred by the software.

If the type checking succeeds, then the program can be evaluated to its normal form.

The software will have a terminal user interface. The type checker reports any type errors and unfillable holes to the user. Simple functional programs will be written in the language to test the type checker and the interpreter.

Budapest, 2020.11.23.