Peixin You

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Education

Ecole polytechnique *Palaiseau, France*

Bachelor of Science, GPA: 4.15/4.0, QUARTILE: 1st *Sept 2019 - June 2022 (Expected)*

- Double major in math and computer science

Research internship

Some Examples in Higher Inductive Type *LIX*

with Samuel Mimram

- We defined addition for integer in HIT and showed that this is a abelian group
- We gave two different definitions of free group and showed that they are equivalent.
- We showed the equivalence between $\mathfrak{S}_n$ with Fin $n \cong$ Fin n by showing that $\mathfrak{S}_n$ can be represented by composition of transitive such as $(i, i+1)$ and also the elements in Fin $n \cong$ Fin n can be regarded as compositions of swap

Existence of Closed Geodesic *CMLS*

with Frank Pacard

- We showed the equation of geodesics on surfaces and in higher dimensional manifold.
- We showed the existence of geodesics in the case where the π_1 of the manifold is not 0
- We showed the existence of geodesics obtained by min-max

Working Experience

SZ DJI Technology Co., Ltd. *SHENZHEN, CHINA*

Assistant Tutor *August 1, 2020 - August 15, 2020*

- Responsible for helping participant finish a machine learning algorithm by themselves for handwritten digit recognition. And also help them to develop an algorithm to solving a Mahjong puzzle
- Awarded as outstanding assistant tutor

Projects

Compiler

- Implemented a compiler for a C-like language
- Implemented CFG, Unreachable Code Elimination and Jump Threading
- Implemented Global Dead Store Elimination, Copy Propagation, Loop Unrolling and some Peephole Optimizations

HoTT library

- Implemented my own HoTT library

MathSolver

- The MathsSolver program will allow a user to upload a picture of a handwritten maths problem or type the problem which will then be solved by the program. For example calculate the derivative and integration. And the MathsSolver will return a symbolic solution.
- I am the team leader of the algorithm group. I am responsible for the part of the implementation of Computer algebra.

Formalization of some sort algorithms

- Using Coq to formalize the merge sort to show the correctness of merge sort algorithm
- Using Coq to formalize the heap sort to show the correctness of merge sort algorithm

Formalization of regular expression

- Developed and proved correct an algorithm for deciding the membership of a word w.r.t. a given regular language.
- We showed the completeness and correctness of regular expression

Skills

Languages Agda (Contributor of Cubical library), Python, C++, Haskell, Isabelle/HOL, COQ