

Dependent Types: Easy as PIE

Work-In-Progress Project Description

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Abstract

Dependent type systems allow for a rich set of program properties to be expressed and mechanically verified via type checking. However, despite their significant expressive power, dependent types have not yet advanced into mainstream programming languages. We believe the reason behind this omission is the large design space for dependently typed functional programming languages, and the consequent lack of experience in dependently-typed programming and language implementations. In this newly-started project, we lay out the design considerations for a general-purpose, effectful, functional, dependently-typed language, called PIE. The goal of this project is to promote dependently-typed programming to a mainstream practice.