

# Formal Proof of Type Preservation of the Dictionary Passing Transform for System F

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**Abstract.** Abstract.

**Declaration.**

I hereby declare, that I am the sole author and composer of my thesis and that no other sources or learning aids, other than those listed, have been used. Furthermore, I declare that I have acknowledged the work of others by providing detailed references of said work.

I also hereby declare that my thesis has not been prepared for another examination or assignment, either in its entirety or excerpts thereof.

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## 1 Introduction

### 1.1 Motivation

### 1.2 Example

## 2 Preliminary

### 2.1 Dependently Typed Programming in Agda

### 2.2 Pure Type Systems

## 3 System F

### 3.1 Specification

**Syntax.**  $\text{data Term} : \text{Set}$  where  $\text{tt} : \text{Term}$   
 $\text{data Term} : \text{Set}$  where  $\text{tt} : \text{Term}$

**Renaming.**

**Substitution.**

**Context.**

**Typing.**

**Semantic.**

### 3.2 Soundness

**Progress.**

**Subject Reduction.**

## 4 System F with Overloading

### 4.1 Specification

**Syntax.**

**Renaming.**

**Substitution.**

**Context.**

**Typing.**

## **5 Dictionary Passing Transform**

### **5.1 Translation**

### **5.2 Type Preservation**

## **6 Conclusion and Further Work**

### **6.1 Hindley Milner**

### **6.2 Semantic Preservation**

## **References**