A Curry-Howard Correspondence for $\lambda_{\wedge}^{BCD}$
Preface

Greg Trost, under the supervision of Richard Statman

March 10, 2019

The following thesis was written by me in the Fall of 2018 and Spring of 2019 as a Senior Thesis for my Bachelor's Degree in Logic and Computation at Carnegie Mellon University. The project was inspired by some of the research that Professor Richard Statman was pursuing in the Department of Mathematics at Carnegie Mellon.

Applications of intersection types can be found in programming languages like Java and Scala, among others. Intersection types can be seen as analogous to multiple inheritance[1] in object-oriented programming, though in some cases advantageous to traditional inheritance, such as the reduction of boilerplate code that can arise from class-inheritance.

The thesis strictly focuses on a formalization of Intersection Types called $\lambda_{\wedge}^{BCD}$ without top (the universal type) in relation to Minimal Logic, a logical system with just $\wedge$ and $\rightarrow$ for connectives, and positive and negative sub-typing.

[1] Pierce, Benjamin C. (1992).Programming with Intersection Types and Bounded Polymorphism. Carnegie Mellon University Pittsburgh, PA, US