Infertense (Name Subject to Future Punny Change)

Nice Peter

***Abstract*— We consider a static type system for checking the partial correctness of tensor operations using numpy ndarrays in Python. We define the calculus for this type system, and implement it as an extension of the Pyre typechecker. We then attempt to quantify the usefulness of our type system by running it against existing Python codebases on Github (Nitin: More specifics needed here.).**

I. INTRODUCTION

Python is a dynamically typed general purpose programming language that has gained popularity due to its simplicity and conciseness. However, without the benefits of static typing, it becomes easy for a programmer to shoot themself in the foot. The release of Python3.5 introduced type hints into the AST, which galvanized the development of several third party typecheckers for Python (MyPy, Pyre).

II. SYNTAX AND SEMANTICS

A. Relevant Tensor Operations

B. Tensor Calculus

C. Abstract Interpretation in Pyre

D. Type System

E. Theorems?

III. EVALUATION

IV. CONCLUSION