Principled Syntactic Code Completion using Placeholders

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Unsound!  Incomplete!  Ad-hoc!

Incorrect programs

Complete programs

Incorrect programs

Correct programs

Sound! Complete!

{S}poofax

Language Specification

SDF3  Name Binding  Type Constraints

Code Completion

Syntactic Completion  Semantic Completion

Parse Placeholders

Expand Placeholders

Format Expansions

Incomplete programs

Complete programs

Infer placeholder

Expand placeholder

Expand/overwrite placeholders

Infer incomplete program

Recover complete program

Recover placeholder

Proposal nodes

Insertion nodes