

Mode-Correctness of Bidirectional Typing

In synthesis mode, the information flow starts from the first premise

$$\frac{\Gamma, x : A \vdash t : \leftarrow B}{\Gamma \vdash \lambda x. t : \leftarrow A \supset B} \text{ABS}^{\leftarrow} \qquad \frac{\Gamma \vdash t : \Rightarrow \text{Int} \supset \text{Bool} \quad \Gamma \vdash u : \leftarrow \text{Int}}{\Gamma \vdash t u : \Rightarrow \text{Bool}} \text{APP}^{\Rightarrow}$$

‘Thus, mode-correctness is necessary. ... When ... the system is syntax-directed: we can “**read off**” an implementation from the rules.’

Dunfield and Krishnaswami. Bidirectional typing. *ACM Computing Surveys*, 54(5):98, 2021.