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Programming Infinite Structures Using Copatterns

Infinite structures are an integral part of computer science as they serve to represent concepts such as constantly running devices and processes or data communication streams. Due to their importance, it is crucial for programming languages to be equipped with adequate means to encode and reason about them. This talk investigates the recent idea of copatterns, a device to represent corecursive datatypes, and thus infinite structures, dually to the usual definitions of recursive datatypes which encode finite data. While the latter defines and analyzes data via constructors and pattern matching, respectively, copatterns bring to type theory a definition of corecursion using observations and copattern matching.