

Challenges and Opportunities Visual Programming Languages Bring to Programming Language Research

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In this talk, I'll begin with the following two straightforward observations about visual programming language research, and then discuss ways in which these seemingly simple points challenge past assumptions about programming language research in rather fundamental ways.

Observation 1: Visual programming language research is about programming language design unfettered by any restriction that all semantics must be expressed by a one-dimensional sequence of textual characters. This gives language designers more choices—more materials and devices that can be employed—in the languages they design.

Observation 2: Researchers in visual programming languages would like to take advantage of the new choices afforded by Observation 1 to design “better” languages than were possible before. Although there are many possible views as to what it means for one programming language to be better than another, most agree that programming language A is better than another programming language B if humans are more likely to correctly create, understand, and/or change a program using A than using B.

How can two such obvious observations challenge some of the most fundamental, well-established ideas of programming languages? In this talk, I'll look at how visual programming languages cast new light on such traditional concepts as some basic notions of syntax, implications regarding theoretical separation between language and environment, and what is known about which language characteristics promote the “betterness” of Observation 2.