

# AI Planning—Week 9

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# Visual Programming—Common Strategies

- Concreteness - Each visual piece represents a concrete value
- Directness - Manipulate objects or values directly
- Explicitness - Explicitly depict dataflow relationships with edges between objects
- Immediate Visual Feedback - Automatic recalculation of values, etc

- Imperative Visual Programming by Demonstration
  - End user demonstrates actions
  - Used in graphical editing
  - Creating graphical macros
- Form/Spreadsheet Based Visual Programming
  - Create a form and specify contents
  - Used in spreadsheets
- Dataflow Visual Programming
  - Pass data through various filters and manipulators
  - Like MIT's Scratch
- Rule-Based Visual Programming
  - User specifies a postcondition on a precondition
  - Specify set of rules in a simulation

- Abstraction - scaling up support for larger programs
- Language Specification - Grammars for visual languages
- Cognitive Theory - Which VPLs improve humans' ability to program?

- “Liveness” - immediacy of feedback during the process of editing a program
  - Level 1 - No feedback about a program is provided to the programmer
  - Level 2 - Can obtain feedback, but not automatically
  - Level 3 - Onscreen values are automatically updated on program edits
  - Level 4 - Same as 3, and responds to other events such as clock ticks



M.M. Burnett and D.W. McIntyre.

Visual programming.

*IEEE Computer*, 28:14–14, 1995.