

## More Automatic Techniques

## Beyond Presentation

- Automatic Interface Generation?
- Approaches

## Automatic Generation with External Information

- Two kinds of information
- e.g. UIDE (User Interface Design Environment)

## UIDE: Model-based Approach

- Application model
- 3 levels

## Application Model

- Application objects & actions
- Interface actions
- Interface object + interaction technique
  - Like Myers' "interactor model"

## Interface Generation

- Create links (mappings) between

## Application Actions

- action
- parameter(s)
- constraint(s) on parameter(s)
- pre-conditions
- post-conditions

## Interface Actions

## Interface Generation

- Hook up

## Presentation Layout, Again

- Automated Layout is often poorly done
- UIDE support for dialog box layout

## Basic Layout Approach

- Use heuristics to generate candidates
- Evaluation metrics to score them
- Designer selects one

## Evaluation Metric

- Weighted average of several factors
  - Balance
  - Symmetry
  - Overall size
  - Aspect ratio
  - Percent unused white space

## Balance

- Balance items of similar "weight"
- Approximate
  - Grid-based: resolution => accuracy

## Other Metrics

- Symmetry
- Overall size
- Aspect ratio
- Percent unused white space

## Designer's Interface

- Ranked alternatives displayed
- Click to get evaluation details

## Layout Generation

- Organization manager
- Presentation manager

## Layout Algorithm

- Bottom up
- For each group, pool kids, solve pairs

## Misc. Details

- "remainder area"
- Confirm group (ok + cancel) always last
- Special heuristics for label+content pairs

## Degrees of Freedom

- Choice of
  - ordering of entry into child pool
  - objects to remove from pool
  - layout strategy
  - spacing and border parameters
  
- Designer preferences

## Object selection strategies

## Layout Strategies

- Column and row heuristics
- Specialized overflow solutions

## Default Pairwise Layout

- Simple layout problem: 2 rectangles
- Consider 3 properties: