Underutilized COnstraint Detector
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Introduction

- In Supply Chain Management, a Product Structure is a complete description of how something gets made.
Introduction

- A product structure also describes *Part - Constraint Dependencies*
Supply Chain Planners can overestimate the amount of interference in Part-Constraint dependencies.
The Underutilized COntstraint Detector

ucod allows supply chain planners to:

1. Visualize the topology of their product structures
2. Detect underutilized constraints in their product structures
Why Vis?

- Reporting that Product Structure X contains an underutilized constraint Y is not enough.
- We are interested in specific Underutilized Constraints; those whose removal from the graph will split up the graph into roughly equal sizes.
When is a constraint underutilized?

- We use the **maximum utilization** to define this categorization.
Problems with Visualizing Large Product Structures
Live-Demo
Limitations

- **Labeling Nodes & Edges**
  - Hovering over (nodes & edges) displays their ID and value
  - But once selected, label disappears

- **Matrix View– Node Counter**
  - Dotted diagonal line is useful to estimate # nodes (Left vs. Right)
  - As the diagram grows in size, a node counter (Left vs. Right) would be useful

- **Constraint Utilization History – ReSize**
  - The window can’t be resized, issue on laptops

- **Different explorer support**
  - Not supported:
Future Work

- Rerun sfdp after contraction
  - On Large datasets
  - Placement should be preserved
  - Hairballing reduced

- Color overlay to split families
  - Assist in visually distinguishing the cut
    - Together with the center node
    - And dashed edges

- Matrix – enhancement
  - Ordering Exploration (Larger graphs)
  - Thicker Rows and Columns for the candidate constraint for removal
  - Epsilon variation not reflected in the adjacency matrix