



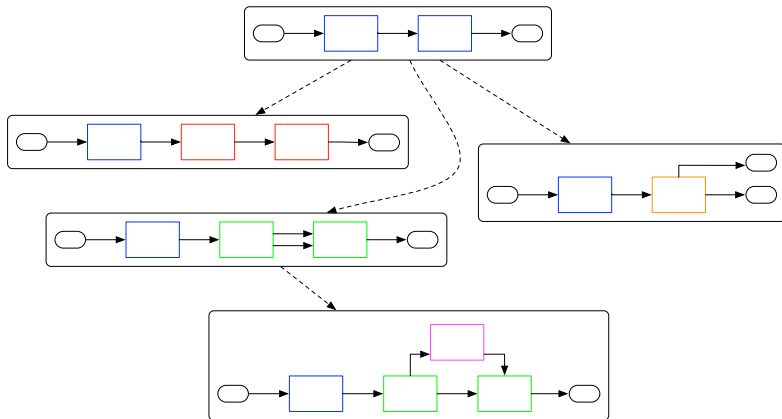
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Interface Variability in Family Model Mining

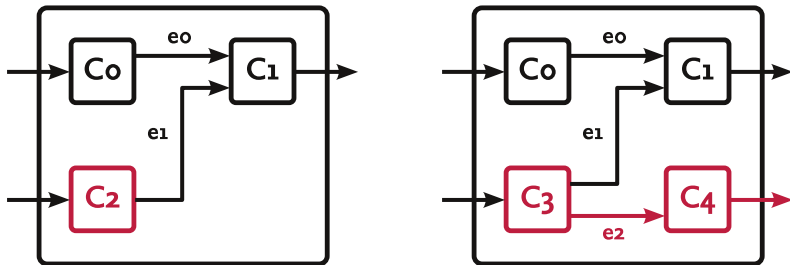
David Wille, Sönke Holthusen, Sandro Schulze and Ina Schaefer,
August 27, 2013

Motivation



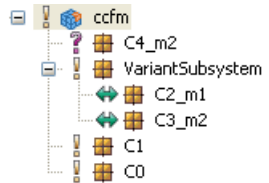
Identifying differences and commonalities is crucial!

Example



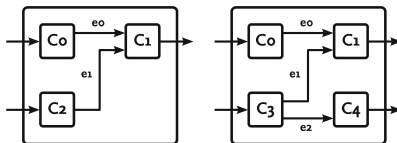
Family Models

- Hierarchical model
- Model solution space
- Model commonalities and differences
- Part of *pure::variants* by *pure systems*



Problem

Input:



Approach:

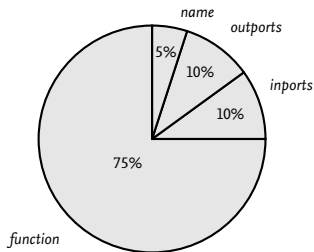
- Walk through model
- Compare components and connectors

Output:

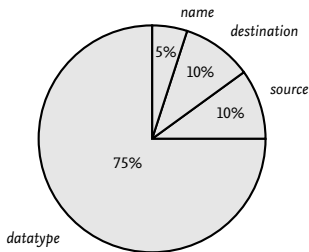
- Similarity of models in %
- Variability between models

A metric is needed!

Metric



Components

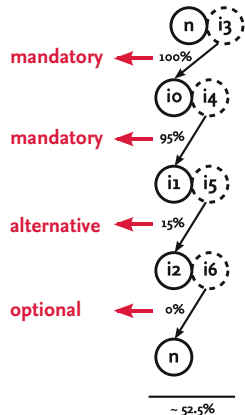
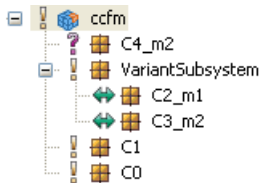
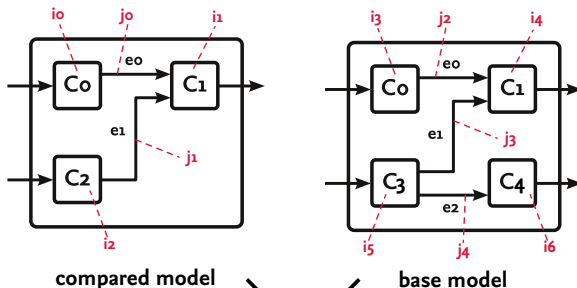


Connectors

Overall similarity:

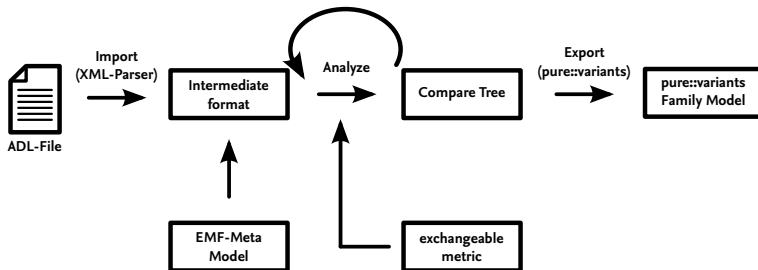
$$\text{similarity} = \frac{2}{3} \cdot \text{similarity}_{\text{components}} + \frac{1}{3} \cdot \text{similarity}_{\text{connectors}}$$

Creating the Family Model



mandatory: $\geq 95\%$
alternative: $> 0\%$ and $< 95\%$
optional: 0%

Workflow



Conclusion

- Automatically analyze different models
- So far only models without hierarchy
- Calculate overall similarity according to metric
- Interface variability is considered
- Identify commonalities and differences
- Detected variability stored in family model
- Could be applied to different languages:
 - e.g. *MATLAB/Simulink, SCADE, ASCET, ...*