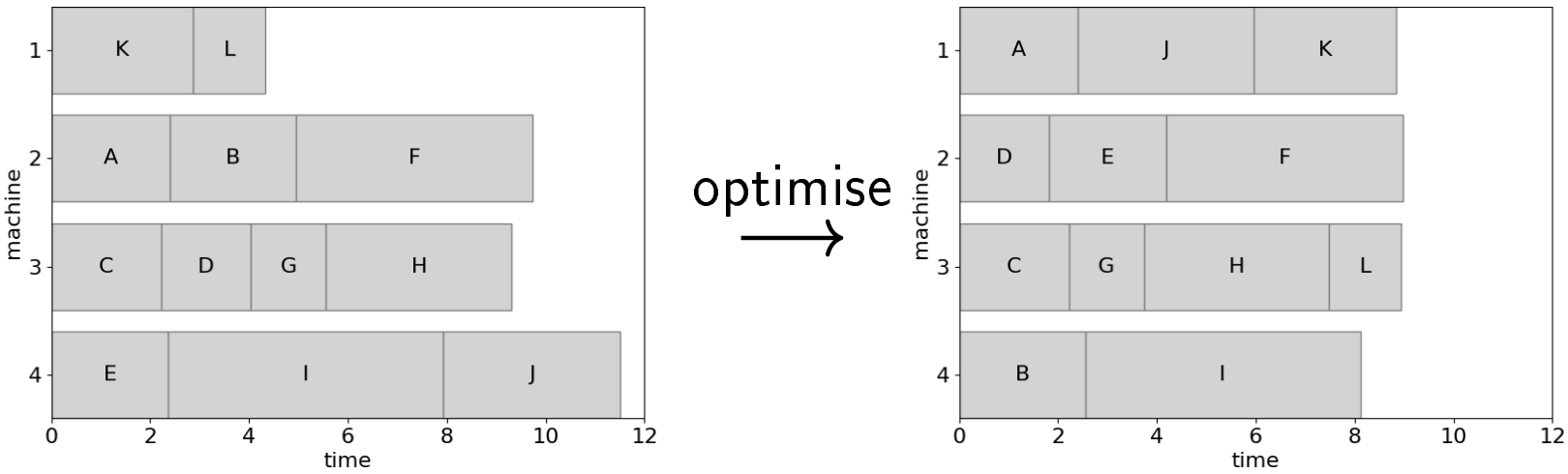
Explaining Makespan Schedules

Myles Lee

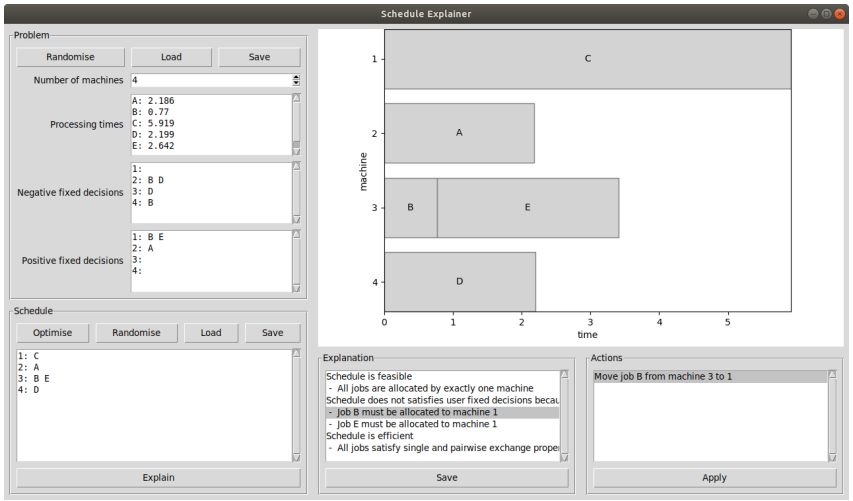
25^{th} June 2019

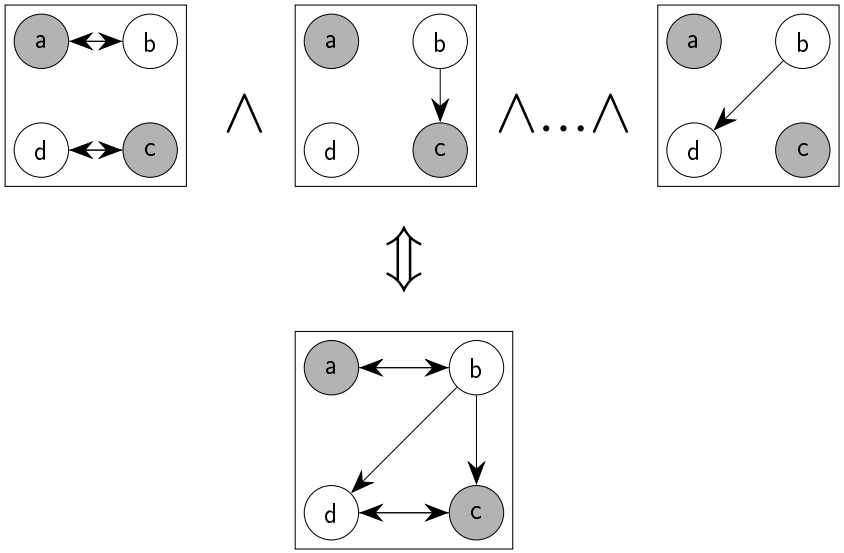
Introduction



- Solvers and schedules are difficult to understand
- Apply argumentation to makespan schedules to generate explanations

Contributions

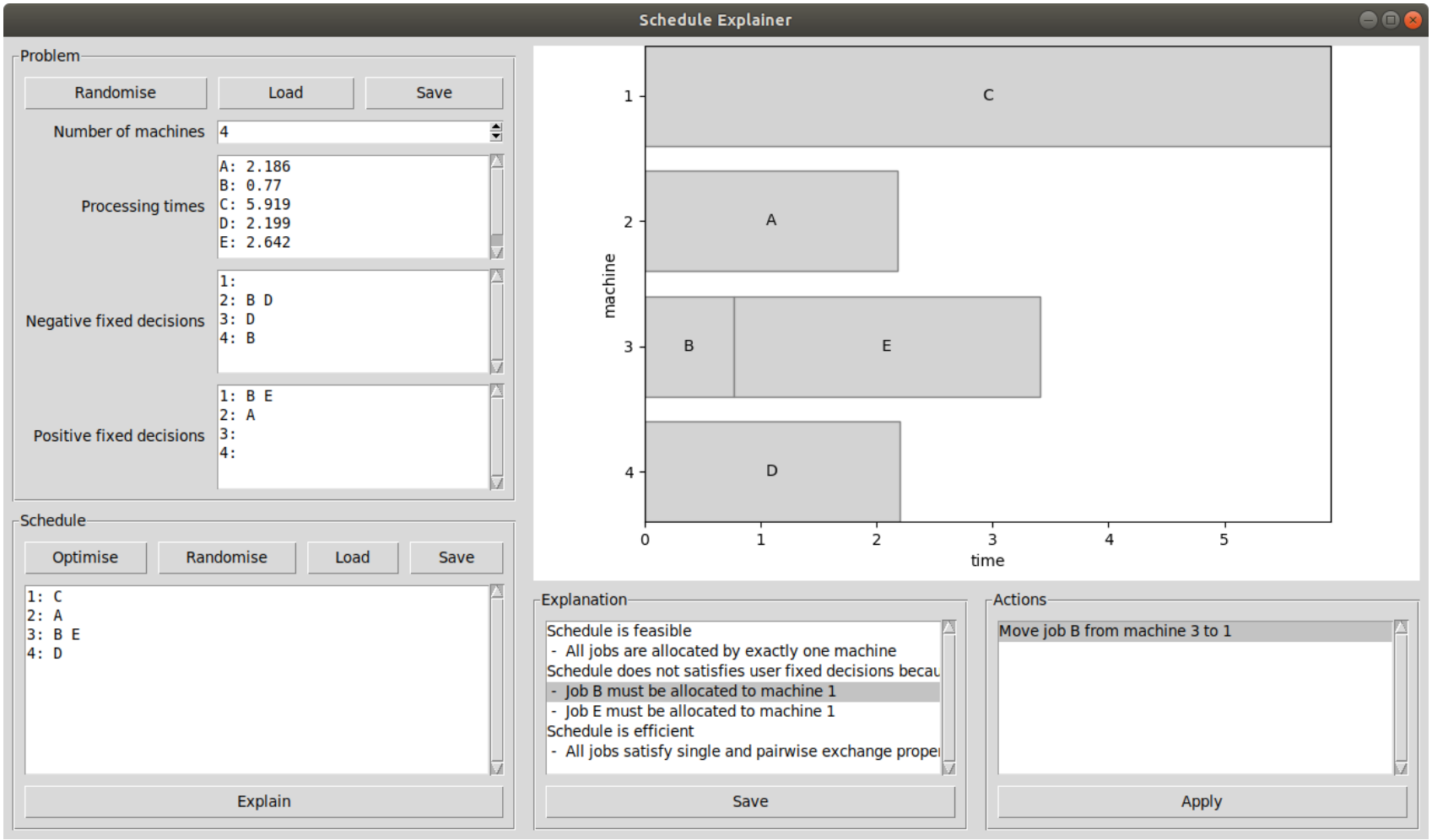




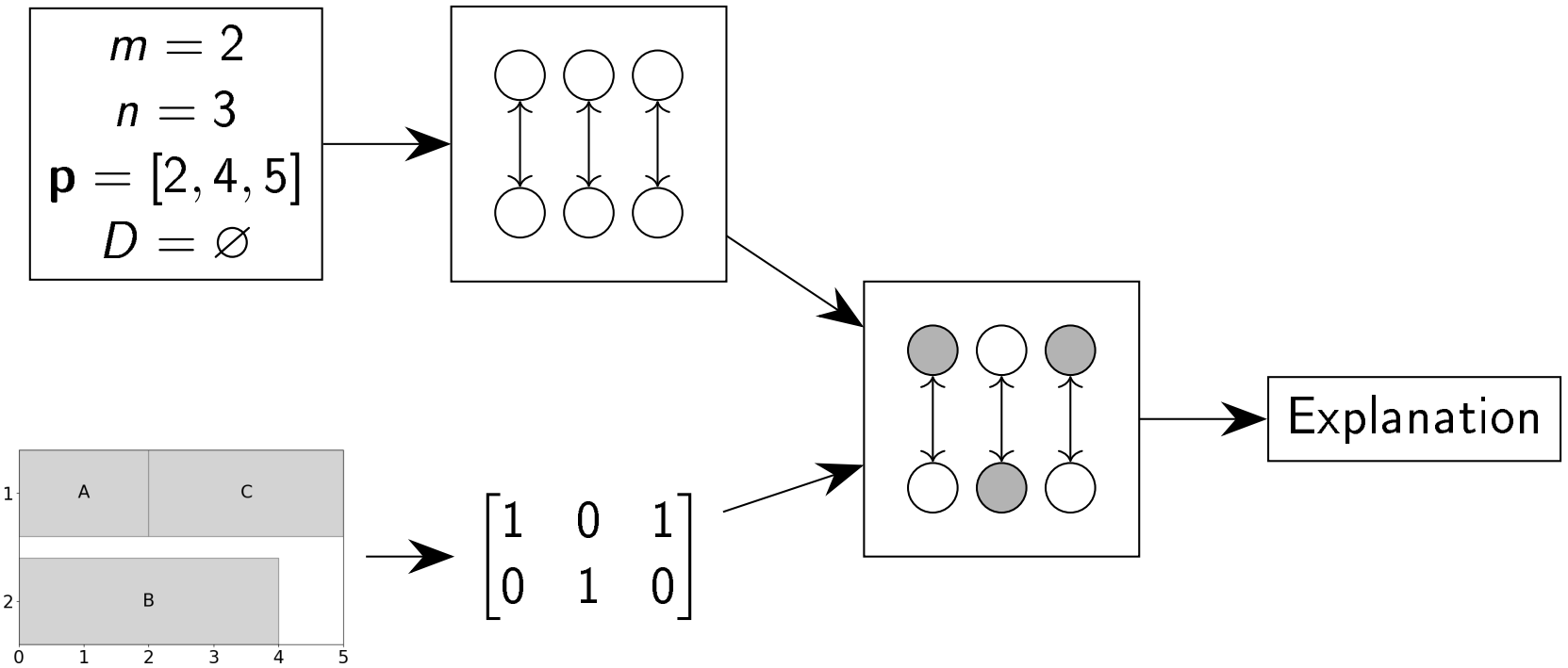
- Interactive tool
- Algorithms

- Theoretical extensions
- Discussion

Demonstration



Pipeline


$m = 2$
$n = 3$
$\mathbf{p} = [2, 4, 5]$
$D = \varnothing$
Explanation
A
C
B
1
2
0
1
2
3
4
5
$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$

Abstract Argumentation

- An abstract argumentation framework is a directed graph $\langle Args, \rightsquigarrow \rangle$.
- Extension E is a subset of $Args$.

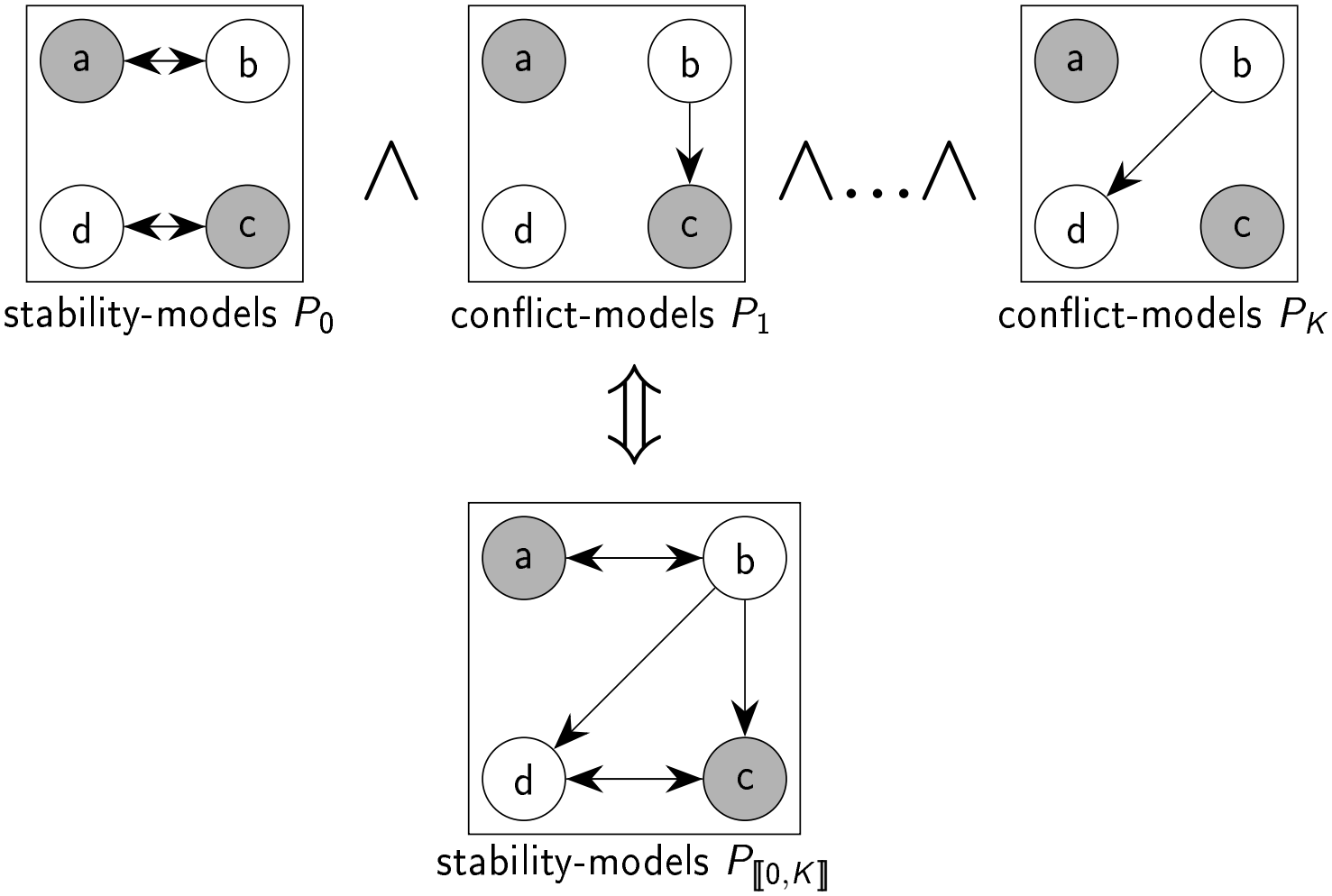
Definition

E is conflict-free on $\langle Args, \rightsquigarrow \rangle$ iff $\forall a, b \in E . a \not\rightsquigarrow b$.

Definition

E is stable on $\langle Args, \rightsquigarrow \rangle$ iff E is conflict-free on $\langle Args, \rightsquigarrow \rangle$ and $\forall a \in Args \setminus E . \exists e \in E . e \rightsquigarrow a$.

Theorem


a
b
d
c
stability-models P_0
conflict-models P_1
conflict-models P_K
stability-models $P_{[\![0,K]\!]}$