

Abstract Argumentation Frameworks with Fallible Evidence

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Abstract Argumentation



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- ▶ $E \subseteq Arg$ is *admissible* (AD) iff
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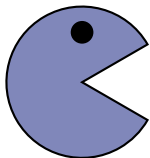
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- ▶ a complete extension E
 - ▶ is *grounded* (GR) if and only if E is minimal,
 - ▶ is *stable* (ST) if and only if $Arg = E \cup \{\mathcal{B} \mid \exists \mathcal{A} \in E : (\mathcal{A}, \mathcal{B}) \in R\}$.

Motivation

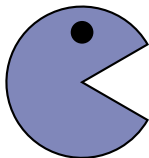
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What? Where did you get that from?

From the internet!



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An *abstract argumentation framework with fallible evidence*

(AAFE) F is a tuple $F = (Arg, R, \mathcal{E}, \delta, \mu)$

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- ▶ $\mu : \mathcal{E} \rightarrow \mathbb{N}$ is the evidence cost function.

Example

Consider the argumentation framework with fallible evidence

$$F = (Arg, R, \mathcal{E}, \delta, \mu)$$

$$Arg = \{a, b, c, d, e, f\}$$

$$R = \{(a, b), (b, c), (d, c), (e, c), (e, d), (f, e)\}$$

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$$\mathcal{E} = \{e_1, e_2, e_3, e_4\}$$

$$\delta(a) = \{e_1\} \quad \delta(b) = \{e_1, e_2\} \quad \delta(c) = \{e_2\}$$

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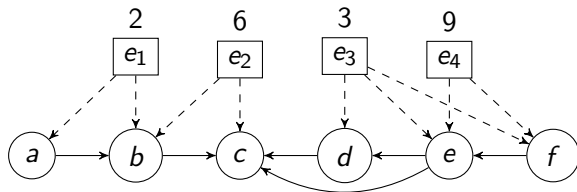
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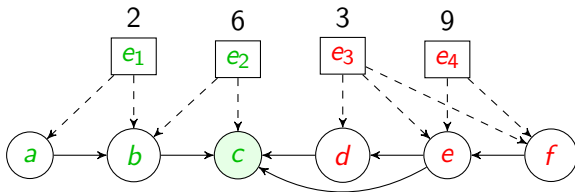


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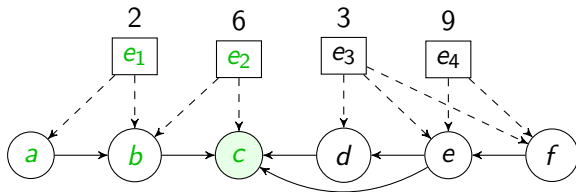
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$$E_1 = \mathcal{E} = \{e_1, e_2, e_3, e_4\}.$$

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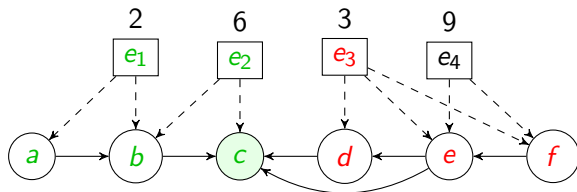
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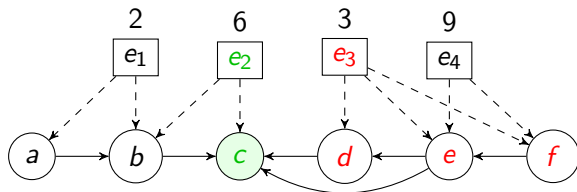
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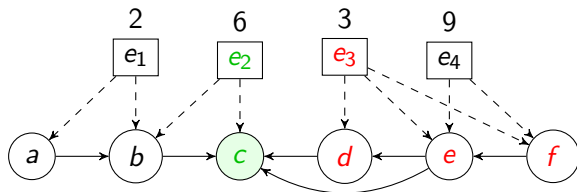
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Ideally, the agent should aim to minimize the cost associated with the evidence retrieval, in order to guarantee the acceptance status of the corresponding argument.

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$$\sigma\text{-}\circ\text{-UAAFE}$$

Given: An AAFE F , an argument a_{query} , a set of available evidence $\hat{\mathcal{E}}$, $K \in \mathbb{N}$

Output: YES if K is an upper bound of the costs, such that the acceptance status of a_{query} does not change with respect to σ and \circ .

Conclusion

σ	σ -CRED-UAAFE	σ -SKEP-UAAFE
GR	$NP - c$	$NP - c$
AD	$\Pi_2^P - c$	trivial
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Thanks for your attention!