An Introduction to Computational Argumentation Semantics (3/5)

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Attacks in practice

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- Bidirectional attack: two extensions

Attacks in practice

- Cramer and Guillaume
- Testing whether people agree
- Attack can be asymmetric
- Example: the source is not reliable

Find the attacks

- A: Louis applied the brake. Therefore, the car slowed down.
- B: Louis applied the accelerator instead of the brake. Therefore, Louis did not apply the brake.
- C: The car did not slow down. Therefore, the car approached the signal at the same speed or higher.
- D: Louis applied the clutch instead of the brake. Therefore, Louis did not apply the brake.

Find the attacks

In the following set of arguments, we assume that Marry has a pet named Maxy.

- A: Maxy's cage is glazed, so there is no hole in its cage.
- B: Maxy is a tiny snake, so Maxy can escape through the holes of its cage.
- C: The cage is specifically intended for tiny snakes; so all holes in the cage are too small for Maxy to go through.
- D: Marry put Maxy in a large cage, so Maxy cannot escape.

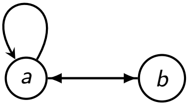
Find the attacks

L denotes the sentence “L is false”.

- A: If L were false, it would follow that “L is false” is true. But since L denotes the sentence “L is false”, this would mean that L is true. So if L were false, L would also be true, which is impossible. So L is not false. Therefore L is true.
- B: If L were true, this would mean that “L is false” is true, because L denotes the sentence “L is false”. But if “L is false” is true, it follows that L is false. So if L were true, L would also be false, which is impossible. So L is not true.

Ideal semantics

- A unique status semantics that returns more accepted arguments than grounded semantics?



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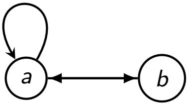

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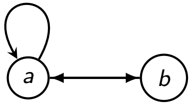

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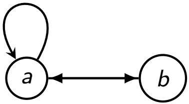

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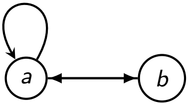

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- Exercise: Find some ideal extensions
- Exercise: Prove that the ideal extension is unique
- Exercise: Find an example where the ideal extension is not equal to the intersection of all preferred extensions.

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- Exercise: If there exists at least one stable extension, the sets of stable and semi-stable extensions coincide
- Exercise: If an argument a is in the grounded extension, it is in all semi-stable extensions

Labellings

Definition (Complete labelling)

We say that $\mathcal{L}ab$ is a complete labelling if and only if for every $a \in \mathcal{A}$:

- if a is labelled in then all its attackers are labelled out
- if a is labelled out then at least one of its attackers is labelled in
- if a is labelled undec then not all its attackers are labelled out and none of its attackers is labelled in.

We denote by $in(\mathcal{L}ab)$ (resp. $out(\mathcal{L}ab)$, $und(\mathcal{L}ab)$) the set of arguments labelled *in* (resp. *out*, *und*).

Exercise: labellings

Ext2Lab, Lab2Ext

- Ext2Lab: given an extension E, we define $\mathcal{L}ab = Ext2Lab(\mathcal{E})$ as follows:
  - $in(\mathcal{L}ab) = \mathcal{E}$
  - $out(\mathcal{L}ab) = \mathcal{E}^+$
  - $und(\mathcal{L}ab) = \mathcal{A} \setminus (\mathcal{E} \cup \mathcal{E}^+)$
- Lab2Ext: given a labelling $\mathcal{L}ab$, we define $\mathcal{E} = Lab2Ext(\mathcal{L}ab)$ as follows:
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- If $\mathcal{L}ab$ is a complete labelling, $\mathcal{L}ab2Ext(\mathcal{L}ab)$ is a complete extension

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- A semi-stable labelling is a complete labelling such that undec is minimal