

# LPAttack: A Feasible Annotation Scheme for Capturing Logic Pattern of Attacks in Arguments

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## Overview

### Attacks in arguments

- Attacks often comprise complex rhetorical moves.
  - e.g., arguers may agree with a logic of an argument while attacking another logic.

### Motivation

- No existing studies capture complex strategic moves in attacks or the presuppositions/value judgments in them.

### Contribution

- Introduced **LPAttack**, a novel annotation scheme that captures complex rhetorical moves in attacks along with implicit presuppositions/value judgments.
- Conducted an annotation study using LPAttack scheme.

CA denies "Conclusion" by giving more value to "death penalty" than "rehabilitation"

**Initial Argument (IA)**  
**Death penalty should be abolished** (*Conclusion*)  
 because it deprives the chance of **rehabilitation of the criminals**. Criminals have no chance to reflect.... (*Premise*)

CA doesn't deny "Premise" rather implicitly agrees

explicit reason behind the implicit value judgement

**Counterargument (CA)**  
 Rehabilitation fails in comparison with the death penalty. **While death penalty ensures criminals never offend again, rehabilitation can't give that guarantee.**

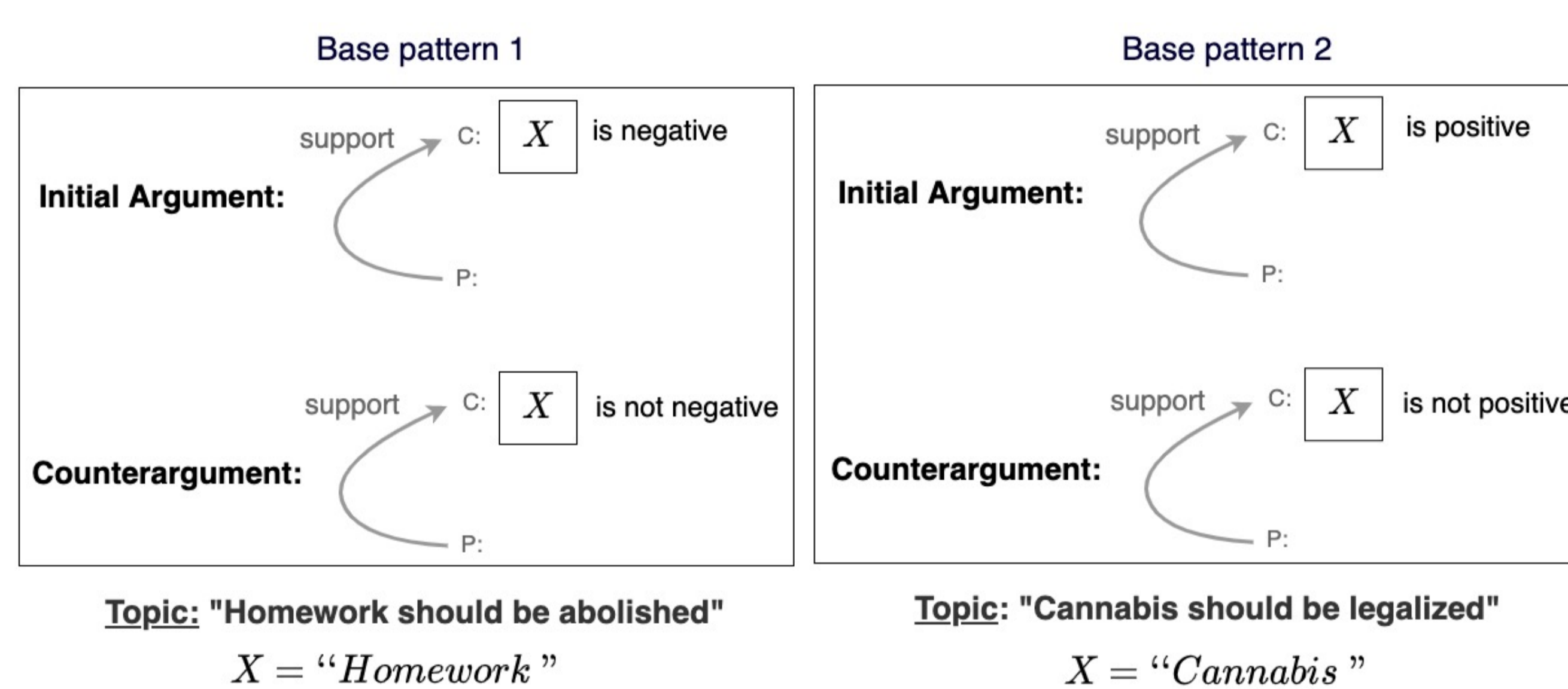
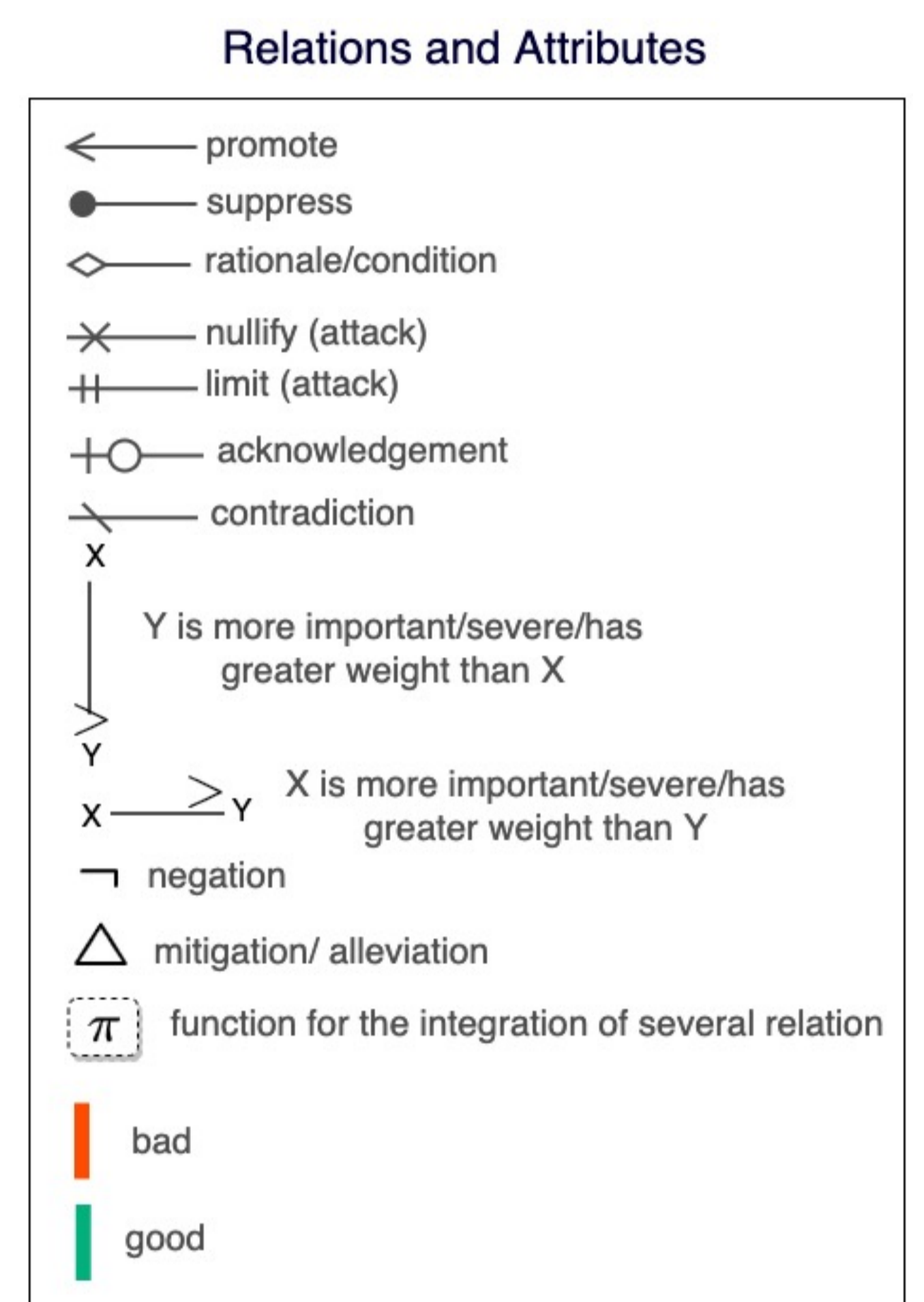
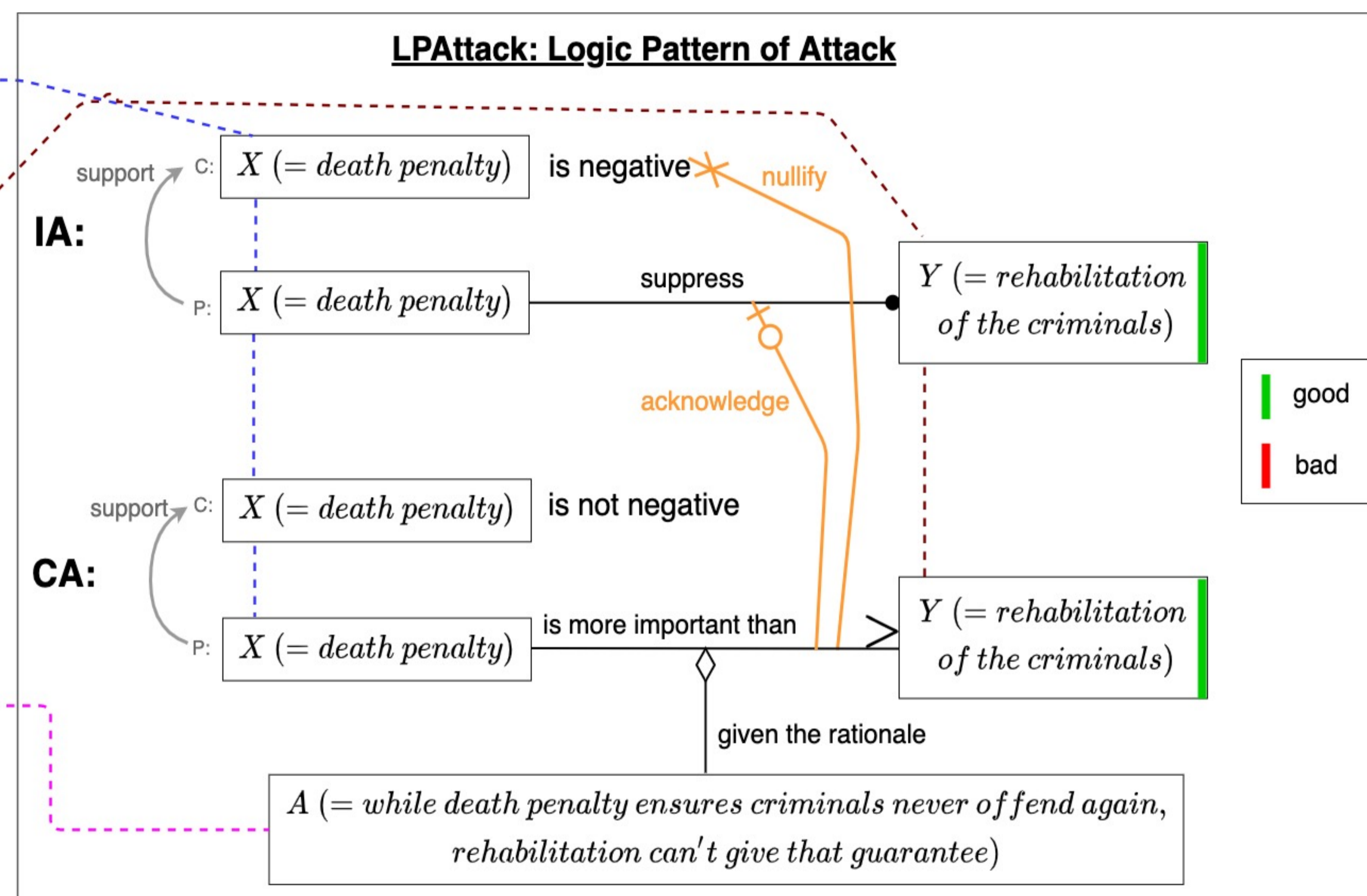
## LPAttack Annotation Scheme

### Initial Argument (IA):

[Death penalty](X) should be abolished (*Conclusion*) because it deprives the chance of [rehabilitation of the criminals](Y). Criminals have no chance to reflect on their wrong-doing. (*Premise*)

### Counterargument (CA):

Rehabilitation fails in comparison with the death penalty. [While death penalty ensures criminals never offend again, rehabilitation can't give that guarantee.](A)



- Base patterns with a set of relations and attributes that capture underlying logic (both explicit and implicit)
- Text-span selection-based approach: annotators choose slot fillers from the given arguments.

## Annotation Study

### Source data

- Debates from TYPIC corpus
  - Each debate comprises an argument and a counterargument

### Setup

- Two annotators annotated 50 debates
  - 145 debates annotated by a single annotator

### Results (results of dual annotations for 50 debates.)

- Coverage: 90% (45/50)
- Inter-annotator agreement: Cohen's  $\kappa = 0.49$
- Text span match (when relations & attributes match): 46% (exact-match: 19%, lenient-match: 26%)

### Annotated corpus

- comprising logic patterns of attacks of 250 debates

### Analysis

- Disagreements between annotators: 2 types
  - (i) same interpretation of the debate but different logic patterns:

Annotation 1: {"homework" is more important than "free time" given the condition/rationale that "homework can establish basic foundation of studying"}

Annotation 2: {"homework" promote "establish basic foundation of studying" which is more important/severe/has greater weight than {"homework" suppress "free time"}}

- (ii) different interpretation of the debates.

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Annotated corpus and annotation guidelines are publicly available at: <https://github.com/cl-tohoku/LPAttack>