**Motivation**

**Temporal Tagging**
- extraction & normalization of temporal expressions

**Main Challenge**
- normalizing relative and underspecified expressions

**Different Domains** [1]
- pose different challenges
- require different strategies

**Existing Approaches**
- focus on English
- focus on news documents

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**News** [1998-04-18]
... for the United States, he said today. ... On May 22, 1995, Farkas was made a brigadier general, and the following year ... However, cited by police in December for driving under the influence of alcohol ... 

**Narrative** [2009-12-19]
1979: Soviet invasion ... they were complying with the Treaty of Friendship ... entered Afghanistan from the north on December 27. ... 

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**TempEval-3**

**Temporal Tagging (Task A)**
- English and Spanish news documents
- annotation according to TimeML

**Evaluation**
- strict and relaxed extraction
- type and value normalization
- ranking attribute: value F1 (relaxed)

**From HeidelTime 1.2 to 1.3**
- improved weekday normalization
- annotations closer to TimeML

**English Adaptations**
- X_REF values
- improved negative rules for ambiguous expressions (e.g., may, fall, march)

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**TempEval-3 Evaluation Results**

**English**
- strict F1 relaxed F1 value F1
  - HeidelTime 1.3: 81.34 90.30 77.61
  - HeidelTime 1.2: 78.07 86.99 72.12
  - NavyTime: 79.57 90.32 70.97
  - (next best system by value F1)

**Spanish**
- strict F1 relaxed F1 value F1
  - HeidelTime 1.3: 85.33 90.13 85.33
  - TipSemB: 82.57 87.40 71.85
  - jrc: 49.53 65.20 50.78

**Summary**
- English: 8 teams, 21 submissions
- Spanish: 3 teams, 3 submissions
- HeidelTime **best system** for English & Spanish for extraction + normalization

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**Error Analysis & Conclusions**

**False Negatives**
- expressions that cannot be normalized with high probability (some time)

**False Negatives / False Positives**
- trade-off due to X_REF expressions; annotated inconsistently (currently)

**Incorrect Value Normalization**
- due to partial matches
- incorrect relation to reference time

**Spanish Resources**
- benefit from high quality English resources as starting point
- contain many patterns and rules not in Spanish training data

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**References**

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