Identification of Speculations

in Relation Extraction

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- Relation Extraction:
  - Identification of facts
  - Facts involve two or more entities

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Google Acquires Tenor

Apple Buys Shazam to Boost Apple Music

Daimler takes over CINTEO GmbH

Microsoft devours Nokia and charges ahead with Windows Phone 8.1

Ad hoc announcement

Apple looking to buy Jay Z's Tidal

Apple Eyeing Purchase Of Jay-Z's Tidal Music Service – Report

Apple Is Trying To Buy Jay Z's Streaming Service Tidal

Apple reportedly interested in acquiring Jay-Z's Tidal music service

Apple Reportedly Exploring a Tidal Acquisition

Apple Circling Tidal As Possible Acquisition To Bolster Apple Music

- **Research Questions**

  1. Which linguistic means are used to express speculations in relation extraction?

  2. Which of these means can be used across relation types?

  3. Is it possible to identify these instances automatically with models including neural networks?
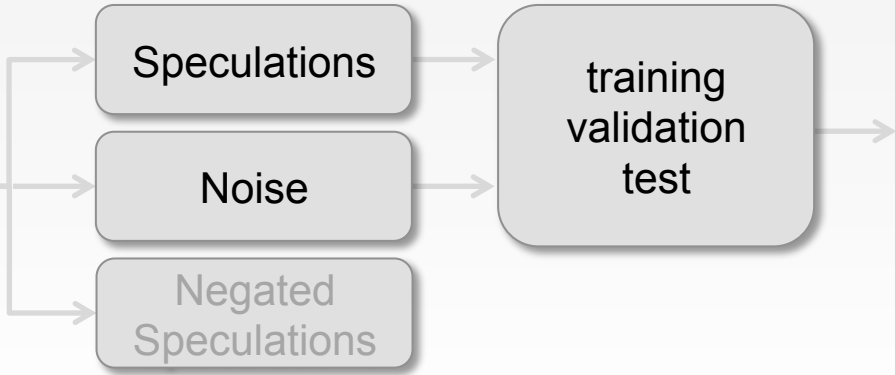
Apple+Tidal

Apple+"Conde+Nast"

Apple+McLaren
...

Apple says it's not buying Tidal

Conde Nast denies rumors it is being purchased by Apple

McLaren denies takeover talks with Apple

Microsoft
Cognitive Services

Database

Speculations

Noise

Negated Speculations

training
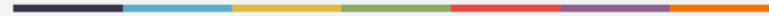validation
test

NorFAML

training
validation
test

- Tools: Tensorflow and Keras

- Models: Convolutional, Recurrent and Recursive Neural Networks

  - Syntactic Features: Tree structure, Part-of-speech

  - Semantic Features: Word embeddings, Named entity recognition

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