Inter-annotator Agreement for ERE Annotation

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Goal: System for inter-annotator agreement analysis of ERE annotation, providing both (1) quantitative scores, (2) information about the types of annotation inconsistencies

◆ Analyzing dually human-annotated files of Entities, Relations, and Events (ERE) annotation for consistency between two files: Annotator vs. gold and annotator vs. annotator

◆ Emphasis different from that of ACE scoring metric. Aims to produce output to help an annotation manager understand the sorts of errors occurring.
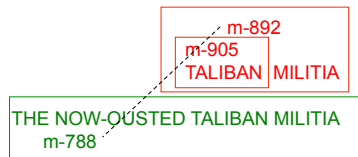
1. Entity mentions

◆ Basis for other levels of comparison

◆ Each entity mention identifies a span of text in the source, indicated by the notation m-#

◆ Possible types of matching between mentions between files:

 ◆ **exact** - entity mentions identify exactly the same span of text

 ◆ **unambiguous overlapping** – entity mention in one file overlaps with only one entity mention in other file

 ◆ **ambiguous overlapping** – overlapping span between two entity mentions, that also overlap with others

Resolution of ambiguous overlapping case 1: Determined by separate unambiguous mapping

m-502 THE EAST
m-463 SOUTH OF IRAN
THE EAST AND SOUTH OF IRAN m-398 m-892

◆ Maximize the number of mapped entity mentions

◆ Ambiguous mappings: m-463->(m-398 or m-892) and (m-502 or m-463)<-m-398
Unambiguous mappings: m-463<-m892 and m-502->m-398
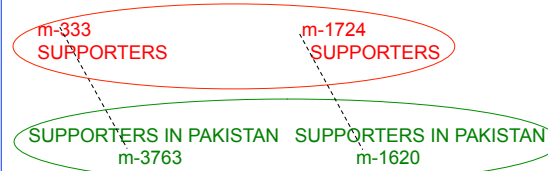Choose m-463->m-892 and m-502<-m-398 to maximize mappings

Resolution of ambiguous overlapping case 2: Determined by maximum overlap

m-892
m-905 TALIBAN MILITIA
THE NOW-OUSTED TALIBAN MILITIA m-788

◆ Choice does not affect the number of mapped entity mentions, so maximize overlap span

◆ Ambiguous mapping: (m-892 or m-905)<-m-788
Choose m-892<-m-788 to maximize overlap

2. Entities

◆ ENTITY - a group of coreferenced entity mentions.

 ◆ Use entity mention mapping used to categorize matches between ENTITIES

 ◆ Do not distinguish between the exact and overlapped entity mention mappings

m-333 SUPPORTERS   m-1724 SUPPORTERS
SUPPORTERS IN PAKISTAN m-3763   SUPPORTERS IN PAKISTAN m-1620

◆ Complete match between ENTITY x and ENTITY y: 1-1 correspondence between mentions of the two ENTITIES

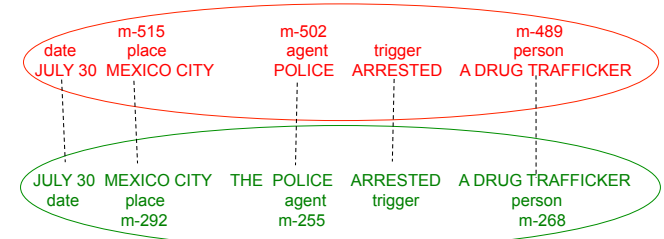m-437 AL-QAEDA   m-593 AI-QAEDA NETWORK   m-840 AL-QAEDA
AL-QAEDA m-424   AL-QAEDA m-2580
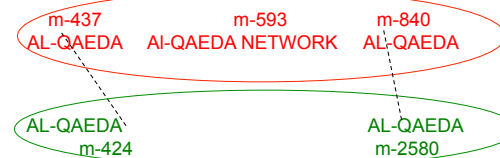
◆ Incomplete match between ENTITY x and ENTITY y: all mentions in x that have a mapping map to a mention in y, all mentions in y that have a mapping map to a mention in x, but some mentions have no match

Entity mention and ENTITY Report

◆ Quantitative score of mapping between entity mentions

◆ Categorizes overlapping entity mentions based on nature of edge differences

 ◆ Presence or absence of determiner or punctuation, or other material

 ◆ Both exact and overlap mentions can match based on location, but differ for the entity mention level (NAMed, NOMinal, PROnominal)

◆ ENTITIES can match as complete or incomplete, but differ on the ENTITY type (ORGanization, PERson, etc.)

3. Relations and Events

◆ A RELATION is defined as having:

 ◆ Two RELATION arguments, each of which is an ENTITY

 ◆ An optional trigger – span of text

 ◆ A type and subtype (e.g., Physical.LOCATED)

◆ An EVENT is defined as having:

 ◆ >=1 EVENT arguments. Each EVENT argument is an ENTITY or date

 ◆ An obligatory trigger

 ◆ A type and subtype (e.g., Life.MARRY)

◆ The mapping between RELATIONS, and between EVENTS, relies on the already-established mapping of the entity mentions. We also map EVENT dates as well

◆ Three types of EVENT matching:

 ◆ **exact match** – arguments match, also the trigger and type/subtype

 ◆ **types different** – arguments and trigger match, but not the type/subtype

 ◆ **no match** – either the arguments for a event in one file do not map to arguments for a single EVENT in the other file, or the triggers do not match

m-515 date JULY 30   place MEXICO CITY   m-502 agent POLICE   trigger ARRESTED   m-489 person A DRUG TRAFFICKER

JULY 30 date   MEXICO CITY place m-292   THE POLICE agent m-255   ARRESTED trigger   A DRUG TRAFFICKER person m-268

Exact match between two EVENTS. All of the arguments in one EVENT map to an argument in the other EVENT, as does the trigger. Argument m-502 (POLICE) in File A maps to argument m-255 (THE POLICE), as an overlap match, although the EVENTS are considered an exact match

4. Current work

◆ Comparisons of EVENTS and RELATIONS were preliminarily based on entity mentions. However, the arguments for EVENTS and RELATIONS are ENTITIES, not entity mentions. Work to adjust the system in this direction is in progress.