ACE (Automatic Content Extraction) Arabic Annotation Guidelines for Relations

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Linguistic Data Consortium

http://www.ldc.upenn.edu/Projects/ACE/

1 Introduction

The goal of the Relation task is to detect and characterize Relations of the targeted Types between entities. Subtypes will be assigned to every relation further characterizing the identified relationships. For each Type, there is a set of possible Subtypes.

Every relation takes two entities (arg1 and arg2) that it links as primary arguments. In most cases, the position of arg1 and arg2 can't be exchanged. The rule to identify arg1 and arg2 is:

If there is one relation R between arg 1 and arg2, then arg1 is R of/about arg2. Please refer to Appendix for a complete table of allowable relations of arg1 and arg2. For example, in the sentence

PER-ORG

			The CEO of Microsoft
Class	***Type***	***Argument 1***	***Argument 2***
PreMod Asserted Unspecified	*Org-Aff.Employment*	*The **CEO** of Microsoft*	***Microsoft***

CEO is arg1, and Microsoft is arg2, it is correct that arg1 (CEO) is R (Org-Aff.Employment) of arg2 (Microsoft). But it is not right if arg2 (Microsoft) is R (Org-Aff.Employment) of arg1 (CEO), because one organization can't be the employee of one person. Another example**,**

PER-GPE

			ذهبت مها إلى نيويورك
Class	***Type***	***Argument 1***	***Argument 2***
verbal Asserted past	*Physical-located*	مها	نيويورك

In this example,مها is arg1, and نيويورك is arg2, arg1 (مها) is the R (Physical-located) of arg2 (نيويورك). It is wrong if we exchange the position of arg1 and arg2 as نيويورك can’t be physically located at مها.

But in some other cases, especially in the relations between person and person, the position of arg1 and arg2 can be exchanged. In the following example, either of them is correct.

PER-PER

والد مها			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive Asserted Unspecified	*Per-Social.Family*	**والد** مها	**مها**

Types and Subtypes will be assigned to every Relation. For each Type, there is a set of possible Subtypes. Types and Subtypes are intended to categorize the Relations on the basis of their meaning. In the example above, the Type of the Relation is Physical and the Subtype is Located. For a complete description of the types and subtypes we will identify, please see Section 3 below.

We will tag the Syntactic Extent for every Relation identified and characterize the Relation by assigning one of the eight Syntactic Class types. The extent and syntactic class type definition are highly inter-dependant and will do a good deal of the work in constraining the taggability (to be defined later). For a complete discussion of the rules for identifying Syntactic Classes and Relation Extents please see Section 2 below.

We will assign a Modality and Tense attribute to each Relation identified. For a complete discussion of the rules for identifying Modality and Tense, please see Section 2.2 below.

2 Taggability

2.1. Preliminary Definitions

Unlike Entities, Relations have no actual anchor in the text. We will limit Relations to only those that are expressed within a single sentence.

Tagging for Meaning

We will only tag Relations between entity mentions when the relationship is explicitly referenced in the sentence that contains the two mentions. Even if there is a relationship between two entities in the real world (or elsewhere in the document), there must be evidence for that relationship in the local context where it is tagged. For example:

John and his brother worked for Comcast.

عمل جون وأخوه لدى كومكاست

In this sentence, there is explicit evidence of a familial relationship between *his* and *brot*her in English. In Arabic, The familiar relationship is then between “John جون” and “his brother أخوهُ” in the case of Arabic. Note that in Arabic, the genitive pronoun “his” is attached to the noun “brother” which makes “his brother اخوهُ ” a

single word phrase. We will neglect any of the relation that involves an attached pronouns argument as we do not tag the attached pronouns as ACE entities.

Frank and James worked for Comcast.
عمل فرانك وجيمس لدى كومكاست

Even if we know that *Frank* and *James* are brothers from elsewhere in the document, we will not tag a familial relation between them in these situations.

Reasonable Reader Rule

For all potential Relations, we will only annotate those Relations for which **there is no reasonable interpretation of the sentence in which the Relation does not hold.**

To understand the application of the reasonable reader rule, we must also consider Relation Modality. A complete definition of Relation Modality is provided in Section 2.1.1 below.

The two Modality attributes are *ASSERTED* and *OTHER*. If we think of the situations described by sentences as pertaining to possible descriptions of the world (or as 'possible worlds') then we can think of *ASSERTED* Relations as pertaining to situations in 'the real world' and we can think of *OTHER* Relations as pertaining to situations in 'some other world defined by counterfactual constraints elsewhere in the context'.

For example, in the sentence:

We are afraid Al-Qaeda terrorists will be in Baghdad.
نخشى أنّ إرهابيّي القاعدة سيكونون في بغداد
The presence of Al-Qaeda terrorists in Baghdad is a situation being described as holding in the counterfactual world defined by 'our' fears. And in:

If the inspectors can get plane tickets today, then they will be in Baghdad on Tuesday
لو يتمكن المفتشون من الحصول على تذاكر الطائرة اليوم فسيكونون في بغداد في يوم الثلاثاء

The inspectors (*they*) are in Baghdad only in the worlds where they get plane tickets today.

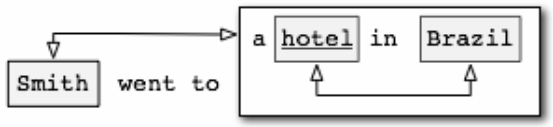
Relation Chains and Entities as 'Blocking Categories'

Promotion through taggable Entities is illegal. In other words, if a potential Relation satisfies the Reasonable Reader Rule (and is expressed in a single sentence), but one of the Entity Mentions to be used as an argument is embedded in some other (Simple) Entity Mention, then that Entity Mention is not accessible and the potential Relation is not taggable. Suppose entity A is

modifying B which is modfying C where B and C have a taggable relation and A and B have a taggable relation, the relation between A and C is blocked by B. Another pattern that the “blocking rule” applies is: when A is modifying B which has a relation with another entity C, the relation between A and C is also blocked.

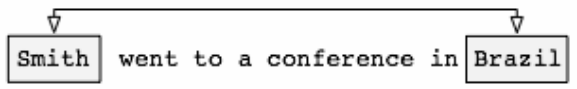
So, in the sentence:

Smith went to a hotel in Brazil
ذهب سمث إلى فندق في البرازيل
(*Smith*, *hotel*) is a taggable PHYS Relation but (*Smith*, *Brazil*) is not, because to get the second relationship, one would have to “promote” *Brazil* through *hotel*.



On the other hand, in:

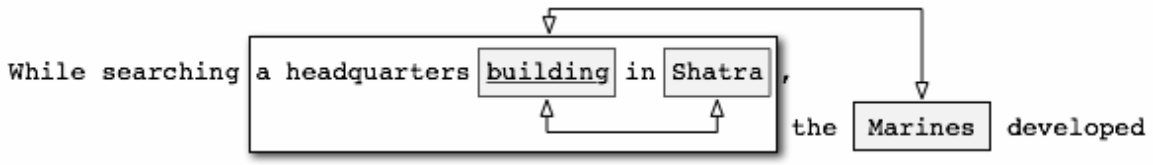
Smith went to a conference in Brazil
ذهب سمث إلى مؤتمر في البرازيل
(*Smith*, *Brazil*) is a taggable PHYS Relation, since it is acceptable to promote through a non-taggable entity (*conference*).



This principle holds even for “long distance” constructions. For instance, in

While searching a headquarters building in Shatra, the Marines developed...

(*the Marines*, *building*) is taggable, but not (*the Marines*, *Shatra*).



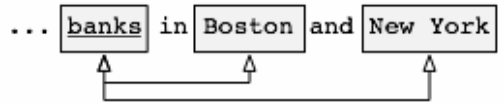
Likewise in:

تسكنُ مها في منطقة بروكلن في مدينة نيويورك
فجر إنتحاريّ نفسه قرب حافلة في مدينة القدس فقتل ثلاث جنود إسرائيليين

The Physical-located relation is taggable between Israeli soldiers and Jerusalem, since it is acceptable to promote through a non-taggable entity (bus).

Note that relationships can distribute over conjunctions. So in:

… banks in Boston and New York …
مصارف في بوستن ونيويورك
There are two Relations: (*banks*, *Boston*) and (*banks*, *New York*).



When the second half of a partitive-style construction is modified, we will tag the relationship between the modifier and both halves of the partitive: relation one (ابنين & خالد) relation two (ابناء اربعة & خالد) In the following example:

ابنين من ابناء خالد الاربعة

Finally, it should be remembered that we operate according to a “tag for meaning” guideline. Even if there is a relationship between two entities in the real world (or elsewhere in the document), there must be evidence for that relationship in the sentence where it is tagged. So, there is no taggable Soc.Family relationship in the phrase "*a woman* who demanded hush money from *a popular entertainer*," despite the fact that it is later revealed that the woman is allegedly the entertainer’s daughter. This is a common source of error.

2.2. Modality and Tense

2.1.1 Modality

The Modality attribute of Relations will be defined as:

Asserted --- when the Reasonable Reader Rule is interpreted relative to the 'Real' world;

Other --- when the Reasonable Reader Rule is taken to hold in a particular counterfactual world.

Negatively defined Relations (e.g. "John is not in the house" جون ليس في المنزل) will not be annotated.

When the entities constituting the arguments of a Relation are hypothetical, then the Relation is understood as *Asserted*. But if the Relation itself is hypothetical, then it is annotated as *Other*. For example:

We are afraid Al-Qaeda terrorists will be in Baghdad.
نخشى التواجد المستقبلي لإرهابيي القاعدة في بغداد

gives two Relations. The ORG-Aff.Membership Relation between *terrorists* ارهابيي and *Al-Qaeda* القاعدة will be annotated as *Asserted*. The Physical.Located Relation between *terrorists* إرهابيي and *Baghdad* بغداد will be annotated as *Other.*

2.1.2 Tense

TENSE will be defined relative to the time of speech.

The potential values for this attribute will be defined as follows:

Past --- the Relation is taken to hold only for some span prior to the time of speech;

Future --- the Relation is taken to hold only for some span after the time of speech;

Present --- the Relation is taken to hold for a limited time overlapping with the time of speech;

Unspecified --- the Relation is 'static' or the span of time for which it holds cannot be determined with certainty;

TENSE will only be taggable for Relations when evidence for it can be found within the extent of the Relation mention. For the majority of Relation mentions with NP extent, this will mean that their TENSE is 'Unspecified.'

Note: Many of the Relations we will annotate will be expressed by noun phrases. Most of the time it will be difficult to determine the TENSE of the Relation expressed. For all such cases, we will use the value *Unspecified*. Some notable exceptions might be:

The president-elect of the US (*Future*)
The former US President *(Past)*

Formulaic Relations

"Wolf Blitzer, CNN, Baghdad." وولف بلتزر, سي إن إن, بغداد

will be annotated with TENSE="Present" by fiat.

R1: "Wolf Blitzer وولف بلتزر" "CNN سي إن إن" (ORG-Aff.Employment Asserted Present)
R2: "Wolf Blitzer وولف بلتزر " "Baghdad بغداد" (PHYS.Located Asserted Present)

2.3. Relation Extent and Syntactic Classes

It is important to note that the accurate identification of the Syntactic Class and the Relation Extent for each Relation will have significant effects on other decisions, such as taggability.

Note: For the ACE Relations task, Syntactic Class is used synonymously with LEXICALCONDITION. The latter is the official property name in APF format, the former a more descriptive nomenclature intended to make the task more accessible to annotators.

The eight Syntactic Classes are intended to provide justification for the tagging of each Relation. Recall that the Reasonable Reader Rule and the restriction of taggable Relations to those that occur within a single sentence do the majority of work in constraining Relation Taggability. The Syntactic Classes are used to provide an additional sanity check on taggabilty. Relation Extent also constrains the accessibility of Arguments of a Relation.

For Arguments, the decision will usually run the other way: the Relation will be justified by the Reasonable Reader Rule and the Syntactic Class and Relation Extent will be defined in such a way: that both arg1 and arg2 are included in the Relation Extent; and that the Syntactic Class felicitously describes that extent (and the syntactic connection between the two arguments).

One direct implication of this approach is that many potential Relations will satisfy the Reasonable Reader Rule but will not fit into one of the 7 explicitly defined Syntactic Classes (all but the *Other* class). These cases should be considered more carefully than the others, and their identification as *Other* should motivate this attention.

Relation Extent is defined relative to each of the proposed Syntactic Classes.

2.3.1 Possessive

Possessive indicates the syntactic structure where the first noun or pronoun is in the possessive case, such as John's brother. In Arabic the structure indicating possessive is called IDafa إضافة where the first noun is possessed by the second, for example, أخو مها(literally means brother of Maha). The extent of these relations is the IDafa إضافة

بيت مها			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Agent-Artifact.UOIM*	مها	بيت

2.3.2 Preposition

The Preposition Syntactic class is used when the one entity mention is linked to the other with a Preposition. The extent of these relations is the prepositional phrase.

الغرفة في البناية كبيرة

الغرفة في البناية			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Part-Whole.Geo*	**الغرفة** في البناية	البناية

Note: If the Prepositional Phrase containing one argument is linked to the other argument with the help of a verb or the prepositional phrase itself is a predicate, then the Syntactic Class is Verbal, not Preposition, for example لمها ثلاثة أخوات .

2.3.3 PreMod

PreMod (Post modifier in Arabic) relations are those motivated by the construction of a proper adjective modifier and the head. For modification, one mention is always contained in the extent of the other. This need to be distinguished from Possessive relation in an IDafa إضافة structure where the extent of the first noun contains that of the second as well. The difference of Premod and Possessive in Arabic is that in Idafa إضافة , the first entity is always indefinite while the second entity is always definite and should be a noun. In Premod, the first entity can either be definite or indefinite, while the second entity is in adjective form and they agree in definiteness. The extent of these relations is the head noun and its modifiers.

القـادة الفـلسطينيون			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod	*Org-Aff.Employment*	**القـادة** الفـلسطينيون	**الفـلسطينيون**

In addition, we only annotate relations exhibited between a mention that is an immediate modifier of the other. The only exception is that a conjunction modifies the same head. If two mentions that conjoined together to modify a head, there is a relation between each conjoined mention and the head. For example:

الجيش الفلسطيني والإسرائيلي			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod	*Part-Whole.Subsidiary*	**الجيش** الفلسطيني والإسرائيلي	الفلسطيني
PreMod	*Part-Whole.Subsidiary*	**الجيش** الفلسطيني والإسرائيلي	الإسرائيلي

2.3.4 Coordination

Coordination relations are found in noun phrases containing the coordinating conjunction ‘ و’ or “ أو” etc.. The extent of these relations is the two entities joined by ‘ و’ or “ أو” etc

هـو وزميـل له مهندس أصدقاء

هـو وزميـل له مهندس			
Class	***Type***	***Argument 1***	***Argument 2***
Coordination	*Per-Social.Family*	**زميـل له** مهندس	**هـو**

2.3.5 Formulaic

For these standard constructions, we will capture the following relations.

Reporter sign-off

حمـدى قنـديل , اذاعة القاهرة, مصـر			
Class	***Type***	***Argument 1***	***Argument 2***
Formulaic	*Physical.Located*	**حمـدى قنـديل**, اذاعة القاهرة, مصـر	**مصـر**
Formulaic	*Org-Aff.Employment*	**حمـدى قنـديل**, اذاعة القاهرة, مصـر	**اذاعة القاهرة**

Addresses

حمـدى قنـديل, القاهرة, مصـر			
Class	***Type***	***Argument 1***	***Argument 2***
Formulaic	*GPE-Aff.CRE*	**حمـدى قنـديل**	**القاهرة**

Elected officials

عضـو مجلس الشـعب زعيـم المعـا رضة خـالد محيى الدين عن القـليو بية			
Class	***Type***	***Argument 1***	***Argument 2***
Formulaic	*Org-Aff.Membership*	**عضـو** مجلس الشـعب زعيـم المعـا رضة خـالد محيى الدين – القـليو بية	**مجلس الشـعب**
Formulaic	*Org-Aff.Employment*	عضـو مجلس الشـعب زعيـم المعـارضة **خـالد محيى الدين** – القـليو بية	**زعيـم**

2.3.6 Participial

Participial relations are those motivated by a taggable relation between a head noun and a noun contained within a relative clause that modifies it. The extent of these relations is the head noun with the modifying relative clause.

سامي الذي طلق زوجته إلتقى بفتاة أخرى

سامي الذي طلق زوجته			
Argument 2	***Argument 1***	***Type***	***Class***
زوجته	**سامي** الذي طلق زوجته	*Per-Social.Family*	*Participial*

الشعوب المقهورة داخل بلادها			
Argument 2	***Argument 1***	***Type***	***Class***
بلادها	**الشعوب** المقهورة داخل بلادها	*Physical.Located*	*Participial*

2.3.7 Verbal

The Verbal Class of relations are those motivated by a taggable mention of a relation between two entities where the relation is directly expressed by a verb tying the two together into the entire sentence. (**The two entities in the relation are subject** الفاعل**and object** المفعول به**(predicate** الخبر **) respectively**.) The extent of these relations is the entire sentence.

Stative or Habitual Constructions

Mentions of two entities can often be linked by stative predicates, where one mention is in the subject position while the other may be a direct object of a preposition such as لـ, في etc.

لفاطمة ثلاثة إخوة			
Argument 2	***Argument 1***	***Type***	***Class***
ثلاثة **إخوة**	**فاطمة**	*Per-Social.Family*	*Verbal*

في الإمارات فلسطينيون كثيرون			
Argument 2	***Argument 1***	***Type***	***Class***
الإمارات	فلسطينيون كثيرون	Physical.Located	*Verbal*

Relations Expressed by Verbs

The relation is between the subject and the object. It doesn't necessarily mean that the verb itself implies the relation. For example:

هو عمل من قبل لصالح المخابرات المصرية			
Argument 2	***Argument 1***	***Type***	***Class***
المخابرات المصرية	**هو**	*Org-Aff.Employment*	*Verbal*

السعودية تعاقدت على شراء شركة إتصالات من الولايات المتحدة الأمريكية			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Agent-Artifact.UOIM*	**السعودية**	**شركة** إتصالات

سافر علي إلى دمشق ليزور عائلته			
Class	***Type***	***Argument 1***	***Argument 2***
verbal	*Physical.Located*	**علي**	**دمشق**
other	*Per-social.Family*	**عائلته**	**علي**

2.3.8 Other

The Other Class of relations is reserved for those that do not strictly satisfy the syntactic requirements of one of the other classes, but still satisfies the 'Reasonable Reader Rule':

> **Do not tag a relation if there is a reasonable interpretation under which relation does not hold.**

In other words, any taggable relation between two arguments in a sentence should be captured. The relation mention extent should be the entire sentence. Usually an "Other" relation is between an entity in the main clause and the adverbial adjunct (such as locative or temporal phrase that modifies the verb).

In the following example, even though there is a prepositional phrase في الضفة الغربية, but the relation is not of Prep, because the prepositional phrase is not modifying **راكب** , but rather modifying the verb اصيب. So the relation between **راكب** and **الضفة الغربية** is "Other". The relation is neither "Verbal", because **الضفة الغربية** is not the object of اصيب.

اصيب راكب في الضفة الغربية عندما فتحت النيران علي مبنى الداخلية			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Physical.Located*	**راكب**	**الضفة الغربية**
Other	*Physical.Located*	**مبنى** الداخلية	**الضفة الغربية**

أفام أحمد في بيت أصدقاءه خلال فترة زيارته لنيويورك			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Per-Social.Lasting*	**أحمد**	**أصدقاءه**

2.3.9 The Extent

If the Syntactic Class is '***Other***' or '***Verbal***', the extent is the whole sentence that contains the entity mentions which will act as Arg-1 and Arg-2, no matter how long the sentence is. A simple *complete sentence* consists of a *subject* (Arabic of subject (الفاعل (أو المبتدأ) and a *predicate (*Arabic of predicate الخبر).

In Arabic, it is very common that the subject can be dropped from a clause if the subject is already mentioned previously. By "clause", we mean a unit that contains a verbal predicate (for example,يسكن في فيلادلفيا) that expresses a relatively complete action or idea. The clause doesn't necessarily have a subject. The tensed verb may imply what the subject is by prefixes such as ya, ta, na ect), but we don't tag those prefixes as entities in ACE annotation. For example, in

خالد من العراق, يسكن في فيلادلفيا ويعمل في جامعة بنسيلفانيا

Khalid is from Iraq, lives in Philadelphia and works at University of Pennsylvania.

there are three clauses that express three complete ideas or actions:

خالد من العراق

Khalid is from Iraq

, يسكن في فيلادلفيا

Lives in Philadelphia

ويعمل في جامعة بنسيلفانيا

Works at University of Pennsylvania.

To annotate the relations in subject-dropped sentences, we follow the rules below:

1. If the two entities in the same clause are involved in a relation, the extent then can just be that clause.

خالد من العراق, يسكن في فيلادلفيا ويعمل في جامعة بنسيلفانيا

خالد من العراق			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Gen-Aff.CRRE*	خالد	العراق

زار رئيس الوزراء العراقي نوري المالكي العاهل الأردني ومن ثم غادر البلاد متجها إلى سوريا

زار رئيس الوزراء العراقي نوري المالكي العاهل الأردني			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Per-Social.Business*	**رئيس الوزراء العراقي نوري المالكي**	**العاهل الأردني**

عاش رعد في باريس لبضع سنوات لكنها لم تعجبه لذا قرر العيش في لندن

عاش رعد في باريس لبضع سنوات			
Class	***Type***	***Argument 1***	***Argument 2***
verbal	*Physical.Located*	رعد	باريس

2. If the subject of a clause is one of the arguments in the relation, but is dropped from the local clause, we need to trace it back to the clause where the subject is overtly expressed and the extent need to expand to that clause.

خالد من العراق, يسكن في فيلادلفيا ويعمل في جامعة بنسيلفانيا

خالد من العراق يسكن في فيلادلفيا			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Physical-located*	خالد	فيلادلفيا

خالد من العراق, يسكن في فيلادلفيا ويعمل في جامعة بنسيلفانيا

خالد من العراق, يسكن في فيلادلفيا ويعمل في جامعة بنسيلفانيا			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*ORG-Affliation.Employment*	خالد	جامعة بنسيلفانيا

زار رئيس الوزراء العراقي نوري المالكي العاهل الأردني ومن ثم غادر البلاد متجها إلى سوريا

زار رئيس الوزراء العراقي نوري المالكي العاهل الأردني ومن ثم غادر البلاد متجها إلى سوريا			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Per-Social.Business*	رئيس الوزراء العراقي نوري المالكي	العاهل الأردني
Verbal	*Physical.Located*	رئيس الوزراء العراقي نوري المالكي	سوريا

عاش رعد في باريس لبضع سنوات لكنها لم تعجبه لذا قرر العيش في لندن

عاش رعد في باريس لبضع سنوات لكنها لم تعجبه لذا قرر العيش في لندن			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Physical.Located*	رعد	لندن

Participial: the extent is the head noun with the modifying relative clause.

أياد علاوي الذي عمل في وزارة الخارجية يشغل منصب رئيس الوزراء

أياد علاوي الذي عمل في وزارة الخارجية			
Class	***Type***	***Argument 1***	***Argument 2***
Participial	*Org-Aff.Employment*	وزارة الخارجية	أياد علاوي

3 Types and Subtypes

In addition to the constraints discussed above, there will be one additional constraint on the taggability of Relations. Namely, a potential Relation Mention will only be taggable in case it expresses a taggable Relation Type and Subtype.

We will tag only a limited inventory of Types and Subtypes. The following subsections define these Types and Subtypes and describe the Entity Type constraints on their possible Arguments.

In each subsection, the potential types of the arguments will be expressed as:

Permitted Relation Arguments:

Type	**Argument 1**	**Argument 2**
TYPE.SUBTYPE	*ENTITY TYPES*	*ENTITY TYPES*

This definition will be followed by a set of examples of the form:

Examples:

ARG1_TYPE-ARG2_TYPE

			EXAMPLE TEXT
Class	***Type***	***Argument 1***	***Argument 2***
SYNTACTIC CLASS MODALITY TENSE	*TYPE.SUBTYPE*	*MENTION* ***HEAD***	*MENTION* ***HEAD***

3.1. Physical

3.1.1 Located

The Location relation captures the physical location of an entity. This relation is restricted to entities whose location can theoretically vary. Persons can and do tend to move around (or be moved around) frequently.

For locations of Facilities, Locations, and GPEs, use Part-Whole.Geographical instead.
We **do not** tag a PHYS.Located relation when someone is *sentenced to prison* or *handed a jail sentence*. There is no taggable PHYS relation in these constructions.

The default category for a relation indicated by a GPE premodifier is GEN-AFF.Citizen-Resident-Ethnicity (e.g. “Chicago gangs”), not PHYS.Located. [This follows the same reasoning that dictates GPE premodifiers defaulting to role GPE.]

Permitted Relation Arguments

Type	Argument 1	Argument 2
Physical.Located	PER	FAC, LOC, GPE

Examples

PER-FAC

الالاف من المذعورين هرعوا إلى الملاجئ			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Physical.Located*	**الالاف** من المذعورين هرعوا إلى الملاجئ	**الملاجئ**

PER-GPE

هو نشــأ وترعرع في وطنه لبنان			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Physical.Located*	**هو** نشــأ وترعرع في وطنه لبنان	**وطنه**

PER-GPE

في الضفة الغربية اصيب راكب عندما فتحت النيران علي حافلة اسرائيلية			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Physical.Located*	في الضفة الغربية اصيب **راكب** عندما فتحت النيران علي حافلة اسرائيلية	**الضفة الغربية**

3.1.2 Near

Near indicates that an entity is explicitly near another entity, but neither entity is a part of the other or located in/at the other.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Physical.Near	Any Entity Type	Any Entity Type

Examples

GPE-GPE

المنيا على بعد حوالي مائتين وخمسين كيلومنراً جنوب القاهرة في وسط مصــر			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Physical.Near*	**المنيا** على بعد حوالي مائتين وخمسين كيلومنراً جنوب القاهرة في وسط مصــر	**القاهرة**

PER-FAC

اللاجئون السودانيون إعتصموا أمام جامع مصطفى محمود			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Physical.Near*	**اللاجئون** السودانيون إعتصموا أمام جامع مصطفى محمود	**جامع مصطفى محمود**

PER-PER

الشخص الجالس بجوار الرئيس			
Class	***Type***	***Argument 1***	***Argument 2***
Participial	*Physical.Near*	**الشخص** الجالس بجوار الرئيس	**الرئيس**

3.2. Part-whole

3.2.1 Geographical

The Geographical relation captures the location of a Facility, Location, or GPE in or at or as a part of another Facility, Location, or GPE. Geographical relationships are the sorts of things one might find in a gazetteer or on a map or building plan, though this is not a requirement per se. Similarly, these are typically permanent relationships, though there are obviously exceptions (a tent might be put up in a certain location for a special event, for example).

The following two types of constructions will also be tagged as Part-Whole.Geographical:

1. GPEs and Regions under the control of some larger GPE:

.. the Indian controlled region …

Part-Whole.Geographical (*region*, *India*)

2. Areas defined by a central GPE:

   … the Atlanta area ..
   … the Los Angeles region …

   Part-Whole.Geographical (*Atlanta*, area)
   Part-Whole.Geographical (*Los Angeles*, *region*)

Permitted Relation Arguments

Type	Argument 1	Argument 2
Part-Whole.Geo	FAC, LOC, GPE	FAC, LOC, GPE

Examples

FAC-GPE

وقع الإنفجار في مدرسة بالمغرب			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Part-Whole.Geo*	وقع الإنفجار **في مدرسة** بالمغرب	**بالمغرب**

FAC-FAC

الجامعة الأمريكية ببيروت في شارع الحمرا			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Part-Whole.Geo*	**الجامعة الأمريكية ببيروت** في شارع الحمرا 2	**شارع الحمرا**

FAC-FAC

منور العمارة			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Part-Whole.Geo*	**منور** العمارة	**العمارة**

GPE-GPE

موسكو، روسيا			
Class	***Type***	***Argument 1***	***Argument 2***
Formulaic	*Part-Whole.Geo*	**موسكو**، روسيا	**روسيا**

LOC-GPE

الحدود التايلاندية			
Class	***Type***	***Argument 1***	***Argument 2***

PreMod	*Part-Whole.Geo*	**الحدود** التايلاندية	**التايلاندية**

LOC-LOC

قمة الجبل			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Part-Whole.Geo*	**قمة** الجبل	**الجبل**

3.2.2 Subsidiary

Subsidiary captures the ownership, administrative, and other hierarchical relationships between organizations and between organizations and GPEs. This includes relationships between a company and its parent company, as well as between a department of an organization and that organization. It also includes the relationship between organizations and the GPE's government of which they are a part.

We will also tag the relation between a GPE and the industries (ORGs) that they control as Part-Whole.Subsidiary:

… *state-controlled banks …*

Part-Whole.Geographical (*banks*, *state*)

Permitted Relation Arguments

Type	Argument 1	Argument 2
Part-Whole.Subsidiary	ORG	ORG, GPE

Examples

ORG-ORG

قسم الكيمياء بكلية العلوم			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Part-Whole.Subsidiary*	**قسم** الكيمياء بكلية العلوم	**بكلية**

ORG-GPE

الجيش اللبناني			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod	*Part-Whole.Subsidiary*	**الجيش** اللبناني	**اللبناني**

ORG-GPE

وزارة الداخلية بالحكومة

Class	Type	Argument 1	Argument 2
PreMod	Part-Whole.Subsidiary	وزارة **الداخلية** بالحكومة	**بالحكومة**

3.3. Personal-Social

Personal-Social relations describe the relationship between people. Both arguments must be entities of type PER.

Please note: The arguments of these relations are not ordered. The relations are symmetric.

3.3.1 Business

The Business relation captures the connection between two entities in any professional relationship. This includes boss-employee, lawyer-client, student-teacher, co-workers, political relationships on a personal level, etc. This does not include relationships implied from interaction between two entities (e.g. "President Clinton met with Yasser Arafat last week").

The PER-SOC.Business relation will be used whenever a reporter is embedded with a military unit (which is annotated as a PERSON entity).

Permitted Relation Arguments

Type	Argument 1	Argument 2
Per-Social.Business	PER	PER

Examples

PER-PER

محامي المتهم			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Business*	**محامي** المتهم	**المتهم**

PER-PER

طبيب العائلة			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Business*	**طبيب** العائلة	**العائلة**

3.3.2 Family

The Family relation captures the connection between one entity and another with which it is in any familial relationship.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Per-Social.Family	PER	PER

Examples

PER-PER

			حماة أخي
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Family*	حماة أخي	حماة **أخي**

PER-PER

			زوجة عمي
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Family*	**زوجة** عمي	**عمي**

3.3.3 Lasting-Personal

Lasting-Personal captures relationships that meet the following conditions:

1. The relationship must involve personal contact (or a reasonable assumption thereof).

2. There must be some indication or expectation that the relationship exists outside of a particular cited interaction.

The first condition excludes relationships like “Gore’s supporters,” “her opponents,” or “people who help Americans laugh,” where there is no expectation that one party will have interacted personally with the other party (or, put another way, spent time with the other party). A reasonable expectation of personal interaction is sufficient: there are relationships that often but not always involve personal contact (like “classmate” or “neighbor”) – these will be allowed in general, as long as their commonplace usage would tend to imply personal contact.

The second condition excludes relationships like “his visitors,” “his victims,” or “his successor,” where there is no indication from the text that the relationship exists outside of the specific event being discussed (a visit, a crime, or a succession, here). In the same way, this excludes cases where one might try to infer a relationship from a description of an event involving both entities (e.g. “**He** visited **her** in the hospital.”).

Permitted Relation Arguments

Type	Argument 1	Argument 2
Per-Social.Lasting	PER	PER

Examples

PER-PER

منى بدأت مشروع تجاري مع قريبها			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Per-Social.Family*	**منى**	**قريبها**

PER-PER

صداقة علي بالمحافظ جلبت له المشاكل			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Per-Social.Lasting*	صداقة **علي** بالمحافظ جلبت له المشاكل	**بالمحافظ**

PER-PER

صديق صدام حسين			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Lasting*	**صديق** صدام حسين	**صدام حسين**

PER-PER

جيران سناء			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Lasting*	**جيران** سناء	**سناء**

PER-PER

زميلة ساره			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Per-Social.Lasting*	**زميلة ساره**	**زميلة**

PER-PER

هو وزميله الصيـاد			
Class	***Type***	***Argument 1***	***Argument 2***
Coordination	*Per-Social.Lasting*	**هو** وزميله الصيـاد	**وزميله**

PER-PER

هؤلاء المقربون للاميرة ديانا			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Per-Social.Lasting*	هؤلاء **المقربون** للاميرة ديانا	**للأميرة**

PER-PER

المدير العام له علاقة بالمحافظ			
Class	***Type***	***Argument 1***	***Argument 2***
Other	*Per-Social.Lasting*	**المدير** العام له علاقة بالمحافظ	**بالمحافظ**

3.4. ORG-Affiliation

3.4.1 Employment

Employment captures the relationship between Persons and their employers. This relation is only taggable when it can be reasonably assumed that the PER is paid by the ORG or GPE. This relation includes the relationship between an elected representative and the GPE he represents, for example, "***John Kerry*** *(D-****Massachusetts****).*"

Note that this relation trumps ethnicity or citizenship: "*American troops*" and "*Russian President Vladimir Putin*" should both be annotated as Employment rather than Citizen-Resident-Ethnicity.

In instances where the Person is a member of some government body (*the Senate, the Knesset, the Supreme Court*, etc.), we will tag this relationship as Membership rather than Employment.

Whenever it is unclear whether an ORG-AFF relation should be annotated as subtype Employment or subtype Membership, we will choose Membership and move on.

Permitted Relation Arguments

Type	**Argument 1**	**Argument 2**
Org-Aff.Employment	PER	ORG, GPE

Examples

PER-GPE

الرئيس الامريكي			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod	*Org-Aff.Employment*	**الرئيس** الامريكي	**الامريكي**

PER-ORG

رئيس ميكروسوفث			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Employment*	**رئيس** ميكروسوفث	**ميكروسوفت**

PER-ORG

جمال مبارك ، الحزب الوطني			
Class	***Type***	***Argument 1***	***Argument 2***
Formulaic	*Org-Aff.Employment*	**جمال مبارك،** الحزب الوطني	الحزب الوطني

PER-ORG

وزير خارجية مصر عمرو موسي			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Employment*	***وزير** خارجية مصر عمرو موسي*	***خارجية***

PER-ORG

an interviewer from The Patriot Ledger			
مسؤول العلاقات العامة بشركة النصر			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Org-Aff.Employment*	**مسؤول** العلاقات العامة بشركة النصر	**بشركة النصر**

3.4.2 Ownership

Ownership captures the relationship between a Person and an Organization owned by that Person.

Note: If the second argument is not an ORG, use the Agent-Artifact relation.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Ownership	PER	ORG

Examples

PER-ORG

مالك شركة الأنوار			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Ownership*	**مالك** شركة الأنوار	**شركة الأنوار**

PER-ORG

عدي صدام حسين إمتلك شركة الأهواز			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Org-Aff.Ownership*	**عدي صدام حسين** إمتلك شركة الأهواز	**شركة الأهواز**

3.4.3 Founder

Founder captures the relationship between an agent (Person, Organization, or GPE) and an Organization or GPE established or set up by that agent.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Founder	PER, ORG	ORG, GPE

Examples

PER-ORG

الذي اسس شركة الكيماويات قد توفي في حادث			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Org-Aff.Founder*	**الذي** اسس شركة الكيماويات قد توفي في حادث	**شركة الكيماويات**

3.4.4 Student-Alum

Student-Alum captures the relationship between a Person and an educational institution the Person attends or attended. Please note that only attendance is required. It is not necessary for the person to have officially graduated from the institution.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Student-Alum	PER	ORG.Educational

Examples

PER-ORG

طلاب جامعة بيروت			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Student-Alum*	**طلاب** جامعة بيروت	**جامعة بيروت**

PER-ORG

احمد تخرج من جامعة القاهرة			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Org-Aff.Student-Alum*	**احمد**	**جامعة القاهرة**

3.4.5 Sports-Affiliation

Sports-Affiliation captures the relationship between a player, coach, manager, or assistant and his or her affiliation with a sports organization (including sports leagues or divisions as well as individual sports teams). This relation subtype

exists because it often requires domain-specific world knowledge to determine whether a sports team is made up of paid or unpaid players (i.e. whether a relationship between a player and a team qualifies as Employment).

We will **always** use the Sports-Affiliation subtype for EMP-ORG relations between a PERSON entity and an ORGANIZATION entity with the subtype Sports.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Sports-Aff	PER	ORG

Examples

PER-ORG

زيدان قاد فرنسا في بطولة كأس العالم			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Org-Aff.Sports-Aff*	**زيدان**	**فرنسا**

PER-ORG

مدير جديد للاهلي			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Org-Aff.Sports-Aff*	**مدير** جديد للاهلي	**للاهلي**

PER-ORG

بعض لاعبي الاهلي السابقين			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Sports-Aff*	بعض **لاعبي** الاهلي السابقين	**الاهلي**

PER-ORG

اللاعبون في نادي الزمالك يرغون في الاحتراف الخارجي			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Org-Aff.Sports-Aff*	**اللاعبون** في نادي الزمالك يرغون في الاحتراف الخارجي	**نادي الزمالك**

3.4.6 Investor-Shareholder

Investor-Shareholder captures the relationship between an agent (Person, Organization, or GPE) and an Organization in which the agent has invested or in

which the agent owns shares/stock. Please note that agents may invest in GPEs.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Shareholder	PER, ORG, GPE	ORG, GPE

Examples

PER-ORG

حاملوا اسهم شركة الريان			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Investor-Shareholder*	*its* ***stockholders***	***its***
Possessive	*Org-Aff.Investor-Shareholder*	***اسهم***	***شركة الريان***

PER-ORG

Time Warner's largest shareholder, with more than 120 million shares			
مساهم بشركة الشريف الإستثمار يمتلك 40% من إجمالي عدد الأسهم			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Org-Aff. Investor-Shareholder*	*الإستثمار* ***مساهم*** *بشركة الشريف يمتلك 40% من إجمالي عدد الأسهم*	***بشركة الشريف***

ORG-GPE

شركة موتورولا استثمرت 120 مليون دولار في تايوان			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Org-Aff.Investor-Shareholder*	***شركة موتورول*** *استثمرت 120 مليون دولار في تايوان*	***تايوان***

3.4.7 Membership

Membership captures the relationship between an agent and an organization of which the agent is a member. Organizations and GPEs can be members of other Organizations (such as *NATO* or *the UN*). As discussed above, instances where a Person is a member of some government body (*the Senate, the Knesset, the Supreme Court*, etc.) will be tagged as Membership, even when the word "member" is not present (e.g. *Supreme Court justice*).

We will always tag the relation between members of terrorist Organizations and those organizations as ORG-AFF.Membership.

Whenever it is unclear whether an ORG-AFF relation should be annotated as subtype Employment or subtype Membership, we will choose Membership and move on.

Exception: This does *not* include political or religious affiliation, even if that affiliation is with an organization as well as an ideology (e.g. Democrat or Catholic). All political party and religious relationships should be marked as Ideology. For examples of Ideology relations, please see section 3.F.1.

Permitted Relation Arguments

Type	Argument 1	Argument 2
Org-Aff.Membership	PER, ORG, GPE	ORG

Examples

PER-ORG

ناشط في حركة السلام الان			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Org-Aff.Membership*	**ناشط** في حركة السلام الآن	**حركة السلام**

PER-ORG

عضو في المحكمة العليا			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Org-Aff.Membership*	**عضو** في المحكمة العليا	**المحكمة العليا**

PER-ORG

اعضاء مجلس الشعب			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Org-Aff.Membership*	***اعضاء*** *مجلس الشعب*	***مجلس الشعب***

GPE-ORG

خمس بلاد تحمل العضوية الدائمة للامم المتحدة			
Class	***Type***	***Argument 1***	***Argument 2***
Verbal	*Org-Aff.Membership*	خمس **بلاد** تحمل العضوية الدائمة للامم المتحدة	**للامم المتحدة**

3.5 Agent-Artifact

3.5.1 User-Owner-Inventor-Manufacturer

This relation applies when an agent owns an artifact, has possession of an artifact, uses an artifact, or caused an artifact to come into being.

Note: if the second argument is an Organization, use ORG-Affiliation.Ownership (arg1=PER) or Part-Whole.Subsidiary (arg1=ORG or GPE).

Permitted Relation Arguments

Type	Argument 1	Argument 2
Agent-Artifact.UOIM	PER, ORG, GPE	FAC, GPE

Examples

PER-FAC

منزل سامح يقع في غرب فيلادلفيا			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Agent-Artifact.UOIM*	**سامح**	**منزل** سامح يقع في غرب فيلادلفيا

Org-FAC

مبنى الشركة في عمان			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Agent-Artifact.UOIM*	**الشركة**	**مبنى** الشركة في عمان

GPE-FAC

بيوت لبنان الرائعة			
Class	***Type***	***Argument 1***	***Argument 2***
Possessive	*Agent-Artifact.UOIM*	**لبنان**	**بيوت** لبنان الرائعة

3.6. Gen-Affiliation

3.6.1 Citizen-Resident-Religion-Ethnicity

Citizen-Resident-Religion-Ethnicity describes the relation between a PER and the GPE in which they have citizenship, the GPE or Location in which they live, or the GPE or PER entity that indicates their ethnicity. We consider a person's birthplace as a place of residence for this purpose (e.g. "the Russian-born athlete" or "he was born in San Francisco").

The default category for a relation indicated by a GPE premodifier is GEN-AFF.Citizen-Resident-Religion-Ethnicity (e.g. “Chicago gangs”), not PHYS.Located. (This follows the same reasoning that dictates GPE premodifiers defaulting to role GPE.)

Note: We will include religious affiliation, even when such affiliation is with an established organization (i.e. “*Catholic parishioners*…“).

Permitted Relation Arguments

Type	Argument 1	Argument 2
Gen-Aff.CRRE	PER	PER.Group, LOC, GPE, ORG

Examples

PER-GPE

رجل الأعمال المصري نجيب ساويرس			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod	Gen-Aff.CRRE	**رجل** الأعمال المصري نجيب ساويرس	**المصري**

PER-GPE

بلد الموارنة الام بيروت, لبنان			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive	Gen-Aff.CRRE	بلد **الموارنة** الام بيروت, لبنان	**بلد**

PER-GPE

بعض ناخبي المغرب			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive	Gen-Aff.CRRE	بعض **ناخبي** المغرب	**المغرب**

PER-GPE

مساهم من الإمارات			
Class	**Type**	**Argument 1**	**Argument 2**
Preposition	Gen-Aff.CRRE	**مساهم** من الإمارات	**الإمارات**

PER-GPE

المقاتلون الفلسطينيون المفقودون			
Class	**Type**	**Argument 1**	**Argument 2**

PreMod	Gen-Aff.CRRE	**المقاتلون** الفلسطينيون المفقودون	**الفلسطينيون**

PER-PER

المواطنين العرب			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod	Gen-Aff.CRRE	**المواطنين** العرب	العرب

PER-PER

مستوطنين يهود			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod	Gen-Aff.CRRE	**مستوطنين** يهود	**يهود**

PER-ORG

الوزير السني			
Class	**Type**	**Argument 1**	**Argument 2**
PreMod	Gen-Aff.CRRE	**الوزير** السني	**السني**

PER-GPE

اهل الدار البيضاء من العرب			
Class	**Type**	**Argument 1**	**Argument 2**
Possessive	Gen-Aff.CRRE	**اهل** الدار البيضاء من العرب	**الدار البيضاء**

3.6.2 Org-Location-Origin

Org-Location-Origin captures the relationship between an organization and the LOC or GPE where it is located, based, or does business.

Note: Subsidiary trumps this relation for government organizations. For instance, "the U.S. Army" should be marked as Subsidiary rather than Org-Location-Origin.

We will also tag the relation between a GPE and the industries (ORGs) that they control as Part-Whole.Subsidiary:

… *state-controlled banks …*

Part-Whole.Geographical (*banks*, *state*)

Permitted Relation Arguments

Type	Argument 1	Argument 2
Gen-Aff.Loc-Origin	ORG	LOC, GPE

Examples

ORG-LOC

شركة اليكترونيات صغيرة في المنطقة الحرة بتونس الخضراء			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Gen-Aff.Loc-Origin*	**شركة** اليكترونيات صغيرة في المنطقة الحرة بتونس الخضراء	**المنطقة الحرة**

ORG-GPE

شركة ادوية صينية رائدة			
Class	***Type***	***Argument 1***	***Argument 2***
PreMod	*Gen-Aff.Loc-Origin*	**شركة** ادوية صينية رائدة	**صينية**

ORG-GPE, ORG-GPE

فرع الشركة في بكين			
Class	***Type***	***Argument 1***	***Argument 2***
Preposition	*Gen-Aff.Loc-Origin*	**فرع** الشركة في بكين	**بكين**

4 Cross-Type Metonymy Relations

Cross-Type Metonymy occurs when more than one aspect of an entity is referenced in a document. For example, entities of EDT type Organization often have a physical entity of type Facility associated with them. These two incarnations of the same entity will be tagged as type Organization when the textual reference is directly referring to the organization and as type Facility when the mention refers to the physical building.

At the relation annotation stage, we will group entities of different types together with a Metonymy relation when they refer to different aspects of the same underlying entity.

The most common Cross-Type Metonymy Link occurs between Organizations and the Facilities they occupy. These two EDT entities are often referred to using the same strings of text.

Examples

In this example, there are two mentions of a hospital. The first mention is referencing the physical building or hospital facility. The second references the organization that runs or administrates the hospital.

*Wouters, 42, died an hour later at **St. John Macomb Hospital**. The suspect died later the same night, **hospital** spokeswoman Rebecca O'Grady said Thursday. His name wasn't released.*

We will annotate examples like this as follows.

مستشفي القديس حنا		
Type	**Argument 1**	***Argument 2***
Metonymy	القديس حنا	مستشفي

5 Appendix Possible relations between ARG1 and ARG2

	PER	ORG	GPE	LOC	FAC
PER	Per_Social.Bus Per_Social.Family, Per_Social.Lasting, Gen_Aff.Ideology, Gen_Aff.CRRE	Org_Aff.Employment, Org_Aff.Ownership, Org_Aff.Student/Alum, Org_Aff.Sports_Affiliation, Org_Aff.Investor/Shareholder, Org_Aff.Membership, Org_Aff.Founder, Gen_Aff.CRRE	Physical.Located, Physical.Near, Org_Aff.Employment, Org_Aff.Investor/Shareholder, Org_Aff.Founder, Gen_Aff.CRRE	Physical.Located, Physical.Near, Gen_Aff.CRRE	Physical.Located Physical.Near, Agent/Artifact.UOIM
ORG		Part_Whole.Subsidiary, Org_Aff.Investor/Shareholder, Org_Aff.Membership	Part_Whole.Subsidiary, Org_Aff.Investor/Shareholder, Gen_Aff.Loc/Origin	Gen_Aff.Loc/Origin	Agent/Artifact.UOIM
GPE		Org_Aff.Investor/Shareholder,Org_Aff.Membership,	Physical.Near, Part_Whole.Geographical Org_Aff.Investor/Shareholder	Physical.Near, Part_Whole.Geographical	Agent/Artifact.UOIM
LOC			Physical.Near, Part_Whole.Geographical	Physical.Near, Part_Whole.Geographical	Physical.Near, Part_Whole.Geographical
FAC			Physical.Near, Part_Whole.Geographical	Physical.Near, Part_Whole.Geographical	Physical.Near, Part_Whole.Geographical