Semantic Tagging & Textual Entailment

ANA anaphoric	**PRO** anaphoric & deictic pronouns: *he, she, I, him*	
	DEF definite: *the, lo^{IT}, der^{DE}*	
	HAS possessive pronoun: *my, her*	
	REF reflexive & reciprocal pron.: *herself, each_other*	
	EMP emphasizing pronouns: *himself*	
ACT speech act	**GRE** greeting & parting: *hi, bye*	
	ITJ interjections, exclamations: *alas, ah*	
	HES hesitation: *err*	
	QUE interrogative: *who, which, ?*	
ATT attribute	**QUC** concrete quantity: *two, six_million, twice*	
	QUV vague quantity: *millions, many, enough*	
	COL colour: *red, crimson, light_blue, chestnut_brown*	
	IST intersective: *open, vegetarian, quickly*	
	SST subsective: *skillful surgeon, tall kid*	
	PRI privative: *former, fake*	
	DEG degree: *2 meters tall, 20 years old*	
	INT intensifier: *very, much, too, rather*	
	REL relation: *in, on, 's, of, after*	
	SCO score: *3-0, grade A*	
COM comparative	**EQU** equative: *as tall as John, whales are mammals*	
	MOR comparative positive: *better, more*	
	LES comparative negative: *less, worse*	
	TOP superlative positive: *most, mostly*	
	BOT superlative negative: *worst, least*	
	ORD ordinal: *1st, 3rd, third*	
UNE unnamed entity	**CON** concept: *dog, person*	
	ROL role: *student, brother, prof., victim*	
	GRP group: *John {,} Mary and Sam gathered, a group of people*	
DXS deixis	**DXP** place deixis: *here, this, above*	
	DXT temporal deixis: *just, later, tomorrow*	
	DXD discourse deixis: *latter, former, above*	
LOG logical	**ALT** alternative & repetitions: *another, different, again*	
	XCL exclusive: *only, just*	
	NIL empty semantics: *{.}, to, of*	
	DIS disjunction & exist. quantif.: *a, some, any, or*	
	IMP implication: *if, when, unless*	
	AND conjunction & univ. quantif.: *every, and, who, any*	

NOT negation: *not, no, neither, without*		**MOD** modality
NEC necessity: *must, should, have to*		
POS possibility: *might, could, perhaps, alleged, can*		
SUB subordinate relations: *that, while, because*		**DSC** discourse
COO coordinate relations: *so, {,}, {;}, and*		
APP appositional relations: *{,}, which, {(}, {—}*		
BUT contrast: *but, yet*		
PER person: *Axl_Rose, Sherlock_Holmes*		**NAM** named entity
GPE geo-political entity: *Paris, Japan*		
GPO geo-political origin: *Parisian, French*		
GEO geographical location: *Alps, Nile*		
ORG organization: *IKEA, EU*		
ART artifact: *iOS_7*		
HAP happening: *Eurovision_2017*		
UOM unit of measurement: *meter, $, %, degree_Celsius*		
CTC contact information: *112, info@mail.com*		
URL URL: `http://pmb.let.rug.nl`		
LIT literal use of names: *his name is John*		
NTH other names: *table 1a, equation (1)*		
EXS untensed simple: *to walk, is eaten, destruction*		**EVE** events
ENS present simple: *we walk, he walks*		
EPS past simple: *ate, went*		
EXG untensed progressive: *is running*		
EXT untensed perfect: *has eaten*		
NOW present tense: *is skiing, do ski, has skied, now*		**TNS** tense & aspect
PST past tense: *was baked, had gone, did go*		
FUT future tense: *will, shall*		
PRG progressive: *has been being treated, aan_het^{NL}*		
PFT perfect: *has been going/done*		
DAT full date: *27.04.2017, 27/04/17*		**TIM** temporal entity
DOM day of month: *27th December*		
YOC year of century: *2017*		
DOW day of week: *Thursday*		
MOY month of year: *April*		
DEC decade: *80s, 1990s*		
CLO clocktime: *8:45_pm, 10_o'clock, noon*		

Bjerva, J., Plank, B. & Bos, J.: **Semantic Tagging with Deep Residual Networks**, COLING, 2016

Abzianidze, L. & Bos, J.: **Towards Universal Semantic Tagging**, IWCS, 2017

Semantic Tagging & Textual Entailment

Tag	Category	Description
ANA	anaphoric	
PRO		anaphoric & deictic pronouns: *he, she, I, him*
DEF		definite: *the, lo^IT, der^DE*
HAS		possessive pronoun: *my, her*
REF		reflexive & reciprocal pron.: *herself, each other*
EMP		emphasizing pronouns: *himself*
ACT	speech act	
GRE		greeting & parting: *hi, bye*
ITJ		interjections, exclamations: *alas, ah*
HES		hesitation: *err*
QUE		interrogative: *who, which, ?*
ATT	attribute	
QUC		concrete quantity: *two, six million, twice*
QUV		vague quantity: *millions, many, enough*
COL		colour: *red, crimson, light blue, chestnut brown*
IST		intersective: *open, vegetarian, quickly*
SST		subsective: *skillful surgeon, tall kid*
PRI		privative: *former, fake*
DEG		degree: *2 meters tall, 20 years old*
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ORD		ordinal: *1st, 3rd, third*
UNE	unnamed entity	
CON		concept: *dog, person*
ROL		role: *student, brother, prof., victim*
GRP		group: *John {,} Mary and Sam gathered, a group of people*
DXS	deixis	
DXP		place deixis: *here, this, above*
DXT		temporal deixis: *just, later, tomorrow*
DXD		discourse deixis: *latter, former, above*
LOG	logical	
ALT		alternative & repetitions: *another, different, again*
XCL		exclusive: *only, just*
NIL		empty semantics: *{,}, to, of*
DIS		disjunction & exist. quantif.: *a, some, any, or*
IMP		implication: *if, when, unless*
AND		conjunction & univ. quantif.: *every, and, who, any*

Tag	Description
NOT	negation: *not, no, neither, without*
NEC	necessity: *must, should, have to*
POS	possibility: *might, could, perhaps, alleged, can*
SUB	subordinate relations: *that, while, because*
COO	coordinate relations: *so, {,}, {;}, and*
APP	appositional relations: *{,}, which, {()}, {—}*
BUT	contrast: *but, yet*
PER	person: *Axl Rose, Sherlock Holmes*
GPE	geo-political entity: *Paris, Japan*
GPO	geo-political origin: *Parisian, French*
GEO	geographical location: *Alps, Nile*
ORG	organization: *IKEA, EU*
ART	artifact: *iOS 7*
HAP	happening: *Eurovision 2017*
UOM	unit of measurement: *meter, $, %, degree Celsius*
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CLO	clocktime: *8:45 pm, 10 o'clock, noon*

Tag	Category
MOD	modality
DSC	discourse
NAM	named entity
EVE	events
TNS	tense & aspect
TIM	temporal entity

RTE1-56 EClass: **entailment**

Euro-Scandinavian media cheer Denmark v Sweden draw

Denmark and Sweden tie

SICK-335 EClass: **neutral** RScore: **4.6**

A group of people is on a beach

Four people are walking on the beach

SICK-248 EClass: **neutral** RScore: **3.6**

The black woman is wearing glasses over the headdress

A woman is wearing an Egyptian headdress

SICK-254 EClass: **contradiction** RScore: **3.2**

A hiker is on top of the mountain and is dancing

There is no hiker dancing on top of the mountain

Semantic Tagging & Textual Entailment

RTE1-56   EClass: **entailment**

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... each

... the beach

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Can semantic tags contribute to textual entailment?

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NAM named entity

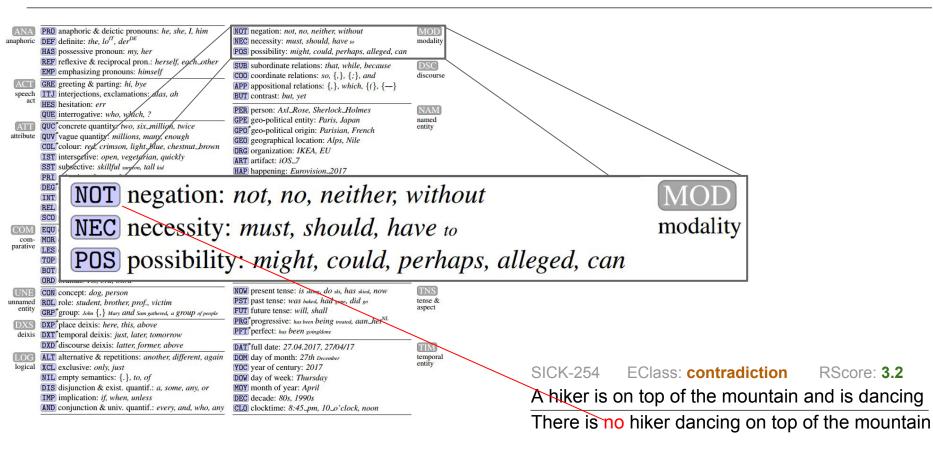SICK-248   EClass: **neutral**   RScore:**3.6**

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Semantic Tagging & Textual Entailment

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	DEF	definite: *the, lo^{IT}, der^{DE}*
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	REF	refl
	EMP	emp

| NOT | negation: *not, no, neither, without* |
| NEC | necessity: *must, should, have to* |

| MOD modality |

ACT speech act	GRE	gree
	ITJ	inte
	HES	hes
	QUE	inte

ATT attribute

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ATT attribute	QUC	con
	QUV	vag
	COL	col
	IST	inte
	SST	sub
	PRI	priv
	DEG	deg
	INT	inte
	REL	rela
	SCO	sco

COM com-parative	EQU	equ
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	DXT	tem
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PST	past tense: *was baked, had gone, did go*
FUT	future tense: *will, shall*
PRG	progressive: *has been being treated, aan_het^{NL}*

| TNS tense & aspect |

LOG logical	ALT	alte
	XCL	exc
	NIL	emp
	DIS	disj
	IMP	imp
	AND	con

UNE unnamed entity

CON	concept: *dog, person*
ROL	role: *student, brother, prof., victim*
GRP*	group: *John {,} Mary and Sam gathered, a group of people*

SICK-335   EClass: **neutral**   RScore: **4.6**

A group of people is on a beach

Four people are walking on the beach

Semantic Tagging & Textual Entailment

Data for semantic tagging:

Semantic tagging: number of gold, silver, bronze and conflicted (red) documents

	Gold	Silver	Bronze	Conflict
English	4,905	56,132	224,016	0
German	818	398	202,954	0
Italian	508	143	120,368	0
Dutch	447	104	39,863	0

RTE3 data part of PMB (`http://pmb.let.rug.nl`)

and more topics related to PMB

- VerbNet thematic role labelling
- Gamification for semantic annotation
- Multi-lingual tokenizer (Elephant) for semantics
- Learning Semantics (in a tuple format)

Come and talk to the PMB team:

http://pmb.let.rug.nl

Parallel
MEANING
BANK