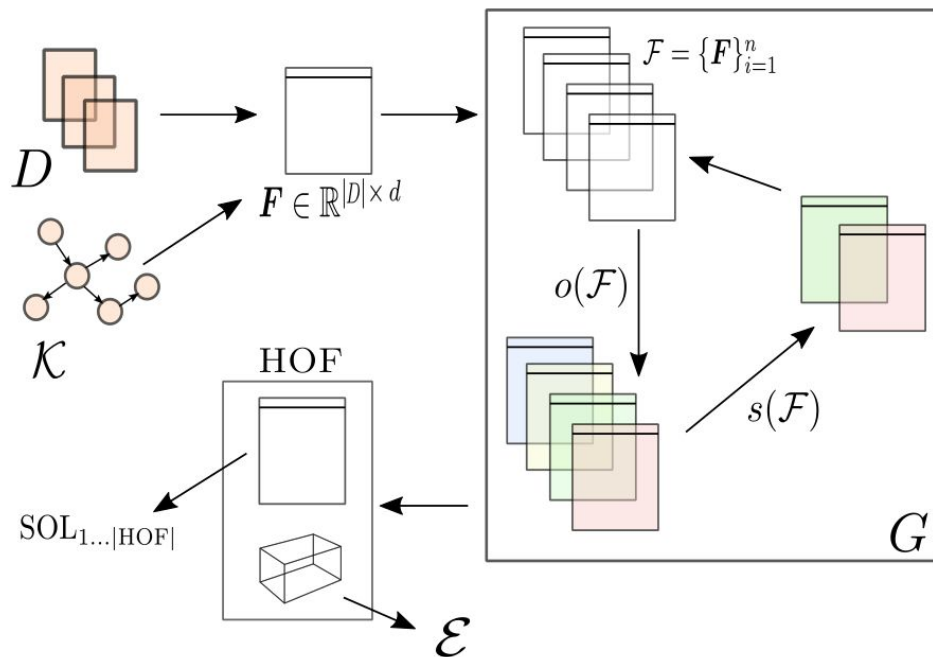


autoBOT

Meta-learning at the representation level

Texts can be represented in different ways. Can we **combine them automatically**?

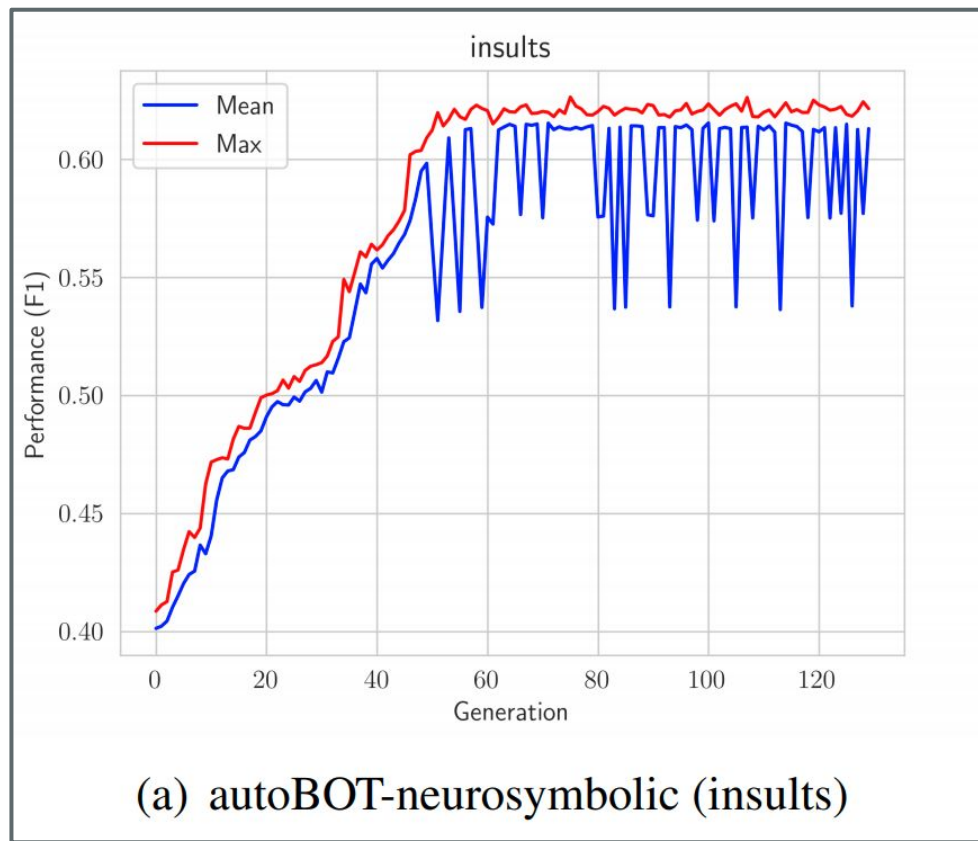


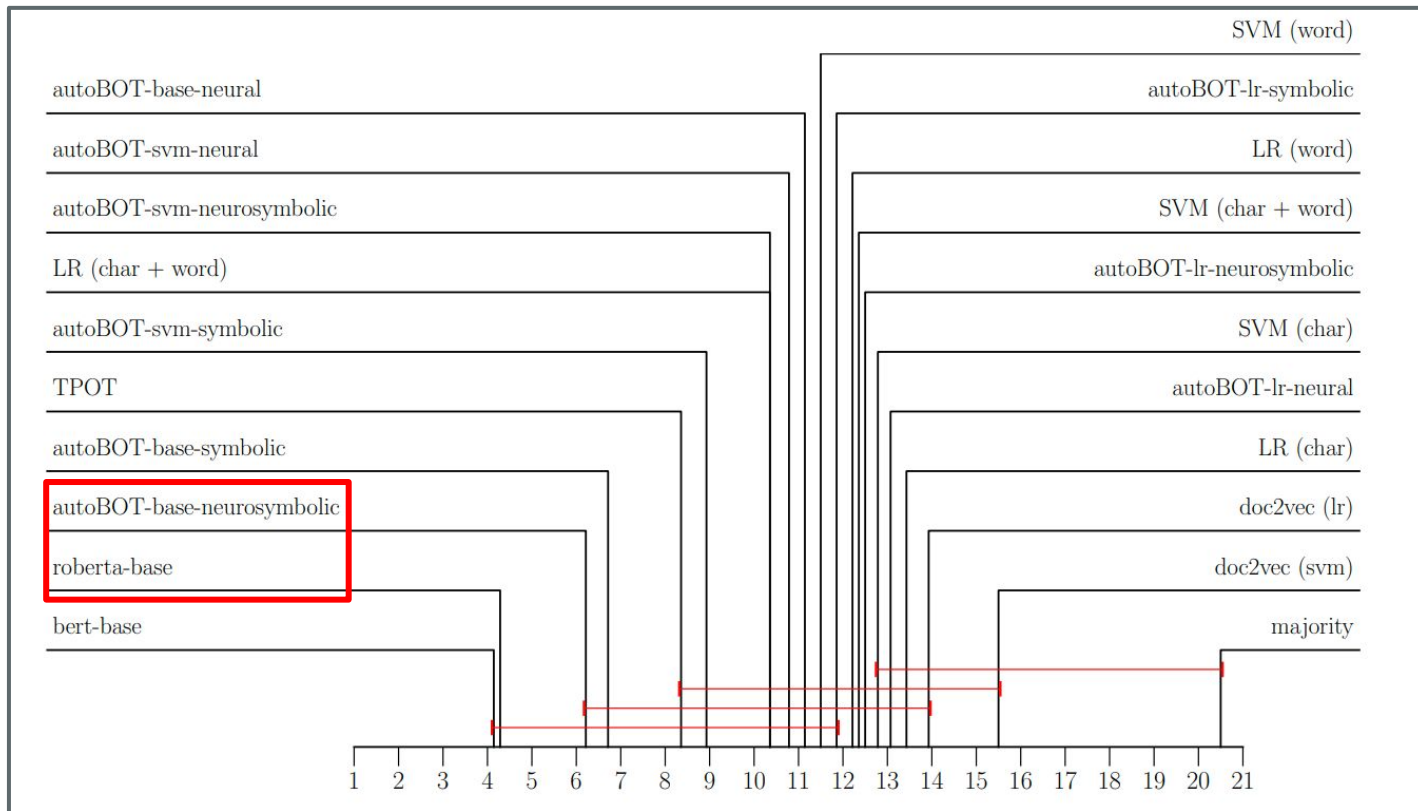
Representations considered

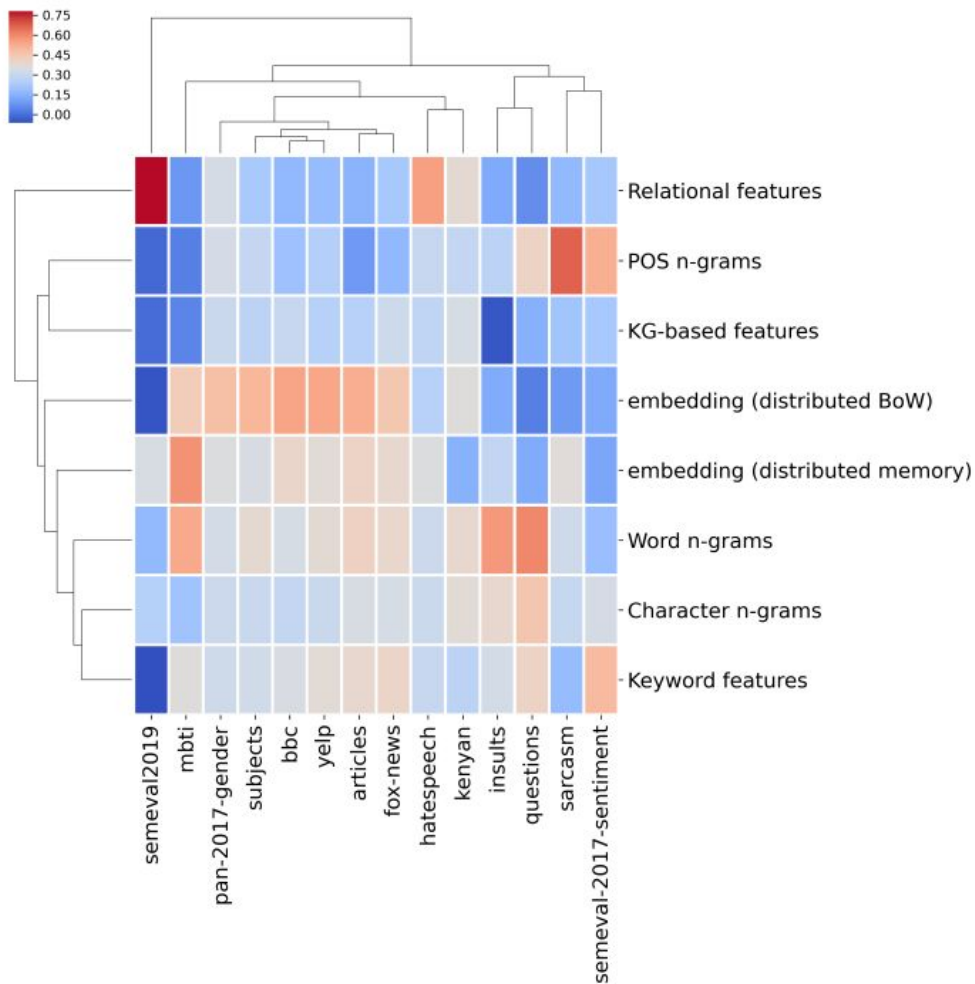
Feature generator type	Description	Data type	Feature type	Sparse
Word n-grams	words	raw text	symbolic	yes
Character n-grams	tuples of sequential characters	raw text	symbolic	yes
Keyword features	one or multi-term keyphrases	graph-based token paths	symbolic	yes
Relational features	globally close characters	distance relation	symbolic	yes
POS n-grams	part-of-speech tags	grammatical	symbolic	yes
Knowledge graph features	grounded relations	semantic	symbolic	yes
Document embeddings	document embeddings (distributed memory - DM)	embedding	sub-symbolic	no
Document embeddings	document embeddings (distributed bag of words - DBOW)	embedding	sub-symbolic	no

Explainability is crucial

Index	Char features	Word features	keyword features	POS features	Relational features	KG features	Neural features v1	Neural features v2
0	film : 0.04	iaaf : 0.12	blair : 0.16	nnp nnp : 0.02	-2-e : 0.4	atlocation(committee,government) : 0.03	1951 : 1.37	3620 : 1.19
1	ilm : 0.04	mr brown : 0.07	music : 0.16	nns : 0.02	-2-n : 0.29	hascontext(fall,uk) : 0.03	3731 : 1.21	1420 : 1.18
2	mr : 0.03	drug : 0.05	brown : 0.14	cd : 0.0	e-8-l : 0.21	hascontext(mr,uk) : 0.02	1021 : 1.15	1960 : 1.09
3	fil : 0.03	mr blair : 0.05	election : 0.12	rb : 0.0	u-2-c : 0.2	relatedto(minister,british) : 0.02	4241 : 1.13	80 : 0.99
4	mr : 0.03	g8 : 0.04	athletics : 0.1	cc : 0.0	-3-l : 0.2	relatedto(secretary,government) : 0.02	1211 : 1.09	4730 : 0.98
5	mr : 0.03	mr howard : 0.04	blackpool : 0.1	ex : 0.0	a-9-o : 0.2	synonym(minister,secretary) : 0.02	4361 : 1.05	4240 : 0.97
6	fil : 0.03	rail : 0.04	party : 0.1	in : 0.0	s-7-i : 0.2	synonym(movie,film) : 0.02	4601 : 1.03	4280 : 0.95
7	mr : 0.03	wto : 0.04	straw : 0.09	nn : 0.0	-2-r : 0.18	usedfor(film,movie) : 0.02	671 : 1.02	380 : 0.94
8	mus : 0.02	big brother : 0.03	athletes : 0.08	pos : 0.0	s-6-t : 0.18	hascontext(average,uk) : 0.01	4061 : 1.0	780 : 0.91
9	mus : 0.02	hunt : 0.03	committee : 0.08	rp : 0.0	p-2-n : 0.18	hascontext(chancellor,britain) : 0.01	3711 : 0.95	2800 : 0.91







Meta transfer?

Import autobot

..

Evolve a representation + ensemble

autoBOTObj = autobot.GAlearner(train_sequences, train_targets, time_constraint = 1).**evolve()**

Predict on unseen data

predictions = autoBOTObj.**predict**(test_sequences)

Ideas for further work

1. Let's extend it with LM-based representations
2. Different learners
3. Automatically run on all shared tasks

Long-term goal: modular + sota performance.

Minimal dev effort -> max cpu utilization.

