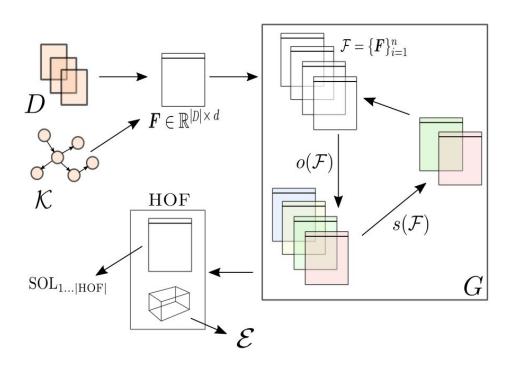
```
k.....'''': kwmmmmmmmmmmmmmmmmmwnxwmnoonmmxkonmmmwxknmmmmmmmmm
0:....'':kWNK00000000000000KNXK0xx0WN0k0NMWX00NMMMMN00XMMMMMWNNMM
Wd.....OWk.''''.....::::::oddllx0KKNMWKxoxKMMWKKWMMMMMMMMMMMMMM
Wx....,OMXxc;'''',,,,,;;;:okkk0NN0xx0NN0OKWMMNkONMMWXNMMMMMMMMM
MO'....,OMMWWKkoc,''',,,,,;;cddld0N00NXOkKNNWMMMWXKNMWKk0WMMMMMMM
M0, .....,OWOkXWMMN0ko:,,,,,,;cox0Kxcl0Xkox0XWMMMMMMMMMWNXXWMMMMMMMM
   .....ONo.:dKWMMMWX0xl:...:oOKX0xddk00KNMMMWWMMMMMMMMMMMMMMMMMM
MK:
MXc
    ...'ONl....lONMMMMWXOddk0xxkKX0xoo0NMMWWKxkNMMMMMMMMN00XMMMMM
MN1.
      .'ONL....'ckXWMMMMMWwwNNNWWMWXXWMMMWKdcdXMMMMMMMMMWNNWMMMMM
MWd.
      ONL.....dkwmmmmmmmmmmmmmmwkkx0wmmnkxmmmmmmmmmmm
      'OWOoc;'....,oONMMMMMMMMWWWW00NWMMMMMMWW0dxKWMMMMMMMMM
MMx.
MMO.
      .; @MMWWNX0kxoc:, ', ckXWMMMMWKdlxKOllxKWMWWMMMWXKXNWMMMMMMMMMM
     MMX; 'cxKWN0x0WKc..';ldk0XWMMMWWWMMMMMMMMMMMMMNk:lKMMN0k0KWMMMMMMMMMM
MMWOOXWN0d;. 'dNXo. ....,:ldkKXWWXXKO0KXNMMMMMNOxd0WMWOcoKMMMMMMMMMM
MMMMW0d:.
        .: ONx'. .....'; oxc,:oxl:OXOkOOXWMWWMMMNOKWMMMMMMMMMMM
MMMW0c.
         MMMMMNKxl,.
        .cK0:. .....:lc..cxod00kXWMMNkccdKWMMMMMMMMMMMMMM
          ,k0l. ....'okdodlcxKWWWMMWWNXK00NMMMMMMMMMMMMMM
MMMMMMMMNKxl:.
```

autoBOT

Meta-learning at the representation level

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

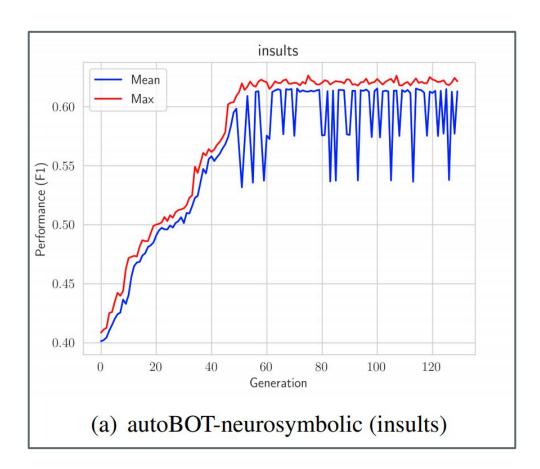


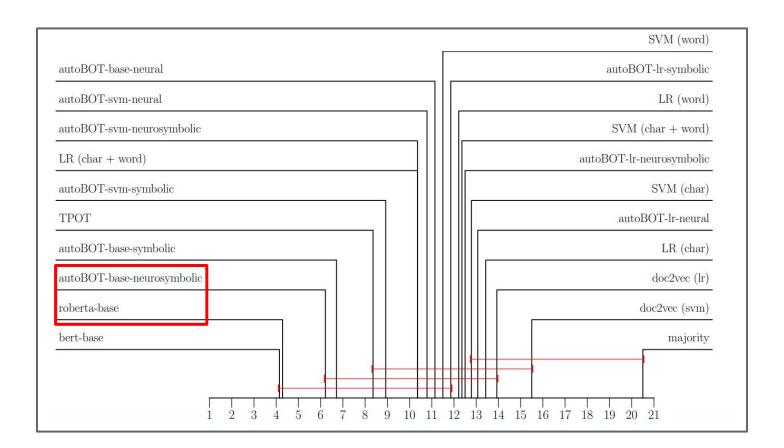
Representations considered

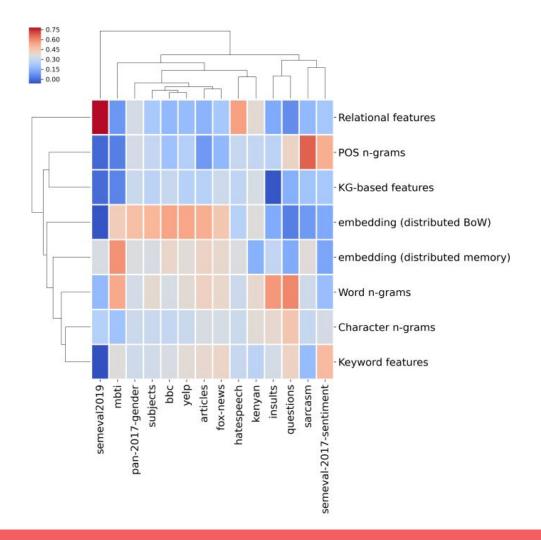
Feature generator type	Description	Data type	Feature type	Sparse
Word n-grams	words	raw text	symbolic	yes
Character n-grams	tuples of sequential characters	raw text	symbolic	yes
Keyword features	one or multi-term keyphrases	graph-based token paths	symbolic	yes
Relational features	globally close characters	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-8-1:0.21	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	-3-1:0.2	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?

••			

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

Predict on unseen data

Predict on unseen data
predictions = autoBOTObj.predict(test sequences)

Evolve a representation + ensemble

Import autobot

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.

