

DL/PaLM versus Dictionary-Based Language Model

Problem	DL/PaLM	Active Structure	Example
Unknown word	?	Looks it up or constructs it from components – that is, it has an array of prefixes and suffixes to construct words	“twitterati”, “lightest” – dictionary doesn’t list comparative and superlative forms unless they collide with other words – “lighter”
Grammatical objects in text	?	Converts them to honorary nouns for parsing	“after a passive verb, where the object of the preposition ...”
Word collisions	?	Handled	“bound” as present tense of one verb, past tense of another
Existential control	?	Switches text through existential connections	In these circumstances, Chapter 9 is void
Bulleting - Long range link	?	Waits until target is encountered	The mechanism described in 10.a.6
Bulleting – reference to text through bullet	?	If already built, returns text, otherwise waits	The objects mentioned in paragraphs (1)(a),(b) and (c) relate to ...
Obscure meaning	?	All known meanings built – slows it down but it doesn’t get tripped up	“break” has 68 definitions, “run” 82
Update of vocab	?	Continual update from dictionary builder	
Response to instructions in English to change internal workings	?	Responds by parsing and building structure	
State changes for prepositions	?	Prepositions join with verbs to change states of objects	He put the money on the table He put the money on the table into his account
Self-reference	?	Document contents have existence	the application of this Act
Long-lived document	?	Definitions of the words used are maintained	
Initial model size	~540 billion passive nodes	10 million active network elements	Typical of a sparse active system against a data-based system.
Vocabulary	?	50,000 words, 15,000 wordgroups, 2,200 collocations, 80 verb forms	Collocations – to pass up, to shut down
Glossary	?	Glossary read for meanings in document	company has the same meaning as in the <i>Income Tax Assessment Act</i>
Wordgroups	?	Wordgroups can have multiple meanings, as well as literal meaning of the words (which means in that instance it isn’t a wordgroup)	multiple-institution person-to-person electronic funds transfer instruction has the meaning ...

Words with high number of definitions – different verbforms for a verb (“set” has 8) may have duplicate definitions

Name	Entries	SubCat	Defs
Press	5	2	37
Blow	9	2	38
by	8	7	38
get	9	7	38
have	11	9	38
Right	7	6	38
in	11	10	39
Light	5	3	39
Stand	7	5	39
Out	5	4	40
Shoot	7	5	40
go	9	7	41
Under	4	5	41
Head	3	2	42
Push	5	4	42
Square	4	4	42
Work	3	2	43
call	7	6	44
draw	4	3	44
line	3	1	44
Roll	4	3	44
Take	4	3	44
pass	5	3	45
round	6	5	45
point	3	2	46
Stick	3	2	46
to	9	8	46
play	3	2	47
hold	3	4	48
Down	9	6	49
On	8	8	49
Strike	6	5	49
turn	5	4	49
do	4	3	50
cut	4	2	57
Set	10	8	62
open	4	5	63
break	3	2	68
Run	7	5	82