

TACKLING NATURAL LANGUAGE GENERATION CHALLENGES AT NARRATIVE SCIENCE

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Narrative Science

OVERVIEW

WHAT IS QUILL?

Quill is an **Advanced Natural Language Generation (NLG)** platform

NLG A form of artificial intelligence (AI) that automatically produces language from structured data.

intent-driven Advanced NLG uses **intent**, or what you want to know, as its guide from the very beginning.

VERB CONJUGATION

- A single verb can have various **word forms**:
 - (1) CREATE
 - a. create, creates, created, creating
 - b. creator, creation, creative, creatively
- (1a) is an example of **inflectional morphology**
 - expresses grammatical features
 - (usually) doesn't change basic meaning or part of speech

- **Grammatical features** are properties that the grammar of any language tracks and manifests
- Some features that English is sensitive to:
 - **number**: dog, dogs
 - **tense**: create, created
 - **gender**: he, she
 - **person**: we, yall, they
 - **mass/count**: 3 books, *3 bloods
 - **case**: I, me, my, mine

INFLECTIONAL PARADIGMS

- Word forms can track multiple features at once
- This can be tracked within an **inflectional paradigm**

CREATE

Present		
	singular	plural
1	create	create
2	create	create
3	creates	create

Past		
	singular	plural
1	created	created
2	created	created
3	created	created

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	singular	plural
1	created	created
2	created	created
3	created	created

- Only 3rd person singular is different – this looks easy!
 - Just add -s to the 3.sg present form and -d to all past forms!

Unfortunately, we all know there are **irregular verbs** in English

BE

Present		
	singular	plural
1	am	are
2	are	are
3	is	are

Past		
	singular	plural
1	was	were
2	were	were
3	was	were

Unfortunately, we all know there are **irregular verbs** in English

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Present		
	singular	plural
1	am	are
2	are	are
3	is	are

Past		
	singular	plural
1	was	were
2	were	were
3	was	were

- Darn, how do we get am or was from be?

PRONOUNS

SENTENCE SELECTION

Grammaticality: only grammatical and accurate sentences should be **generated**

Sentence selection: the stylistically best sentence from the set of grammatical candidate sentences should be **selected**

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Sentence selection: the stylistically best sentence from the set of grammatical candidate sentences should be **selected**

- but what determines a stylistically ‘good’ sentence?

SUBJECTIVE AXES OF 'GOODNESS'

- Most native speakers will agree when a sentence is grammatical
- But style is vague and elusive, varying from person to person

SUBJECTIVE AXES OF 'GOODNESS'

- Most native speakers will agree when a sentence is grammatical
- But style is vague and elusive, varying from person to person
- Which do think is the best sentence?

- (2) Aaron Young generated \$3M in revenue in 2016.
- (3) Aaron Young's revenue was \$3M in 2016.
- (4) Revenue for Aaron Young was \$3M in 2016.
- (5) In 2016, Aaron Young generated \$3M in revenue.
- (6) Aaron Young's 2016 generated revenue was \$3M.

CONCLUSION

ELEMENTS

The theme provides sensible defaults to `\emph{emphasis}` text, `\alert{accent}` parts or show `\textbf{bold}` results.

becomes

The theme provides sensible defaults to emphasis text, **accent** parts or show **bold** results.

DARK BACKGROUND



CONCLUSION

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`github.com/matze/mtheme`

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QUESTIONS?