A Text Microplanner for Narrative Generation
Dr. Nancy L. Green, James Mattice, Michael Branon
Department of Computer Science, University of North Carolina Greensboro
nlgreen@uncg.edu

Problem
- Generate concise and coherent English text from the internal representation of a narrative, called a discourse plan.
- Discourse plans are automatically generated by NCSU’s Narrative for Sensemaking (N4S) team’s discourse planner.
- Discourse plans represent rhetorical relations and semantics but not sentence structure or word choice for the narrative.
- A simplistic approach to translating discourse plans into English creates repetitive, unnatural and potentially confusing sentences.

DotA 2 to Narrative Text
- Defense of the Ancients (DotA) 2 is a multiplayer online battle arena game used as an example domain.
- Players compete to gather resources and destroy opposing players and bases.
- NCSU N4S team’s discourse planner automatically generates discourse plans from game traces.
- Discourse plans are input to UNCG team’s Microplanner.
- UNCG Microplanner transforms discourse plans to English.

Input: Discourse Plan (RST)
- Uses Rhetorical Structure Theory (RST) to represent logical organization of text
- Internal nodes of tree are RST relations, e.g.: - Sequence: events occurred in temporal sequence - Parallel: events occurred in parallel - Result: cause-effect relationship
- Leaf nodes (1-10): event propositions and entity descriptions

Microplanner – Part I
- Flatten RST tree into list of Sentence Plans:
  - Decide which leaf nodes of tree (1 or more) to be expressed in each sentence and add words expressing RST relation:
    Example (refers to RST tree on left):
    Sentence Plan list: [1,3] [Then 2, 4] [Then 5] [Meanwhile 6] [So 7] [Then 8] [So 9] [Then 10]
- Map event propositions in Sentence Plans to syntactic “verb frame” for sentence, e.g.
  event: [action(attack), agent(entity CM), patient(entity Mrna), instrument(entity sword)]
  => verb frame: “strike”, subject(entity CM), direct_object(entity Mrna), complement(“with”, entity(sword))
- Ellipsis: Merge adjacent redundant Sentence Plans, e.g.,
  [Entity1 went to Bottom River] + [Entity2 went to Bottom River] => [Entity1 and Entity2 went to Bottom River]

Microplanner – Part II
- Transform entities in Sentence Plans to acceptable English referring expressions, e.g.: - proper names: “Ember Spirit” - pronouns: “he”, “his”, “himself” - indefinite descriptions/first mention: “a magic silver sword” - indefinite descriptions/co-referential: “the sword”
- Pass finished sentence plans to SimpleNLG (open source software)
- SimpleNLG: performs grammatical operations on Sentence Plans, e.g., adds tense and subject-verb agreement inflections to word roots

Output

AFTER MICROPLANNER:
Ember Spirit, a Radiant hero, was joined by Dire Creep 1, Dire Creep 2, and Dire Creep 3
Ember Spirit, Dire Creep 1, Dire Creep 2, and Dire Creep 3 moved from Bottom River to Bottom No-man’s Land.
So, Ember Spirit and Dire-creep-group-1 attacked Radiant-creep-group-1, while Radiant-creep-group-1 attacked Dire-creep-group-1 and Ember Spirit.
Then Radiant-creep-1 killed Dire-creep-2.
Meanwhile Dire-creep-3 killed Radiant-creep-4.
Ember Spirit killed Radiant-creep-group-1.
Ember Spirit killed Radiant-creep-2 bearing-chains.
Ember Spirit killed Radiant-creep-2 bearing-chains.
Ember Spirit killed Radiant-creep-1.
Ember Spirit killed Radiant-creep-1.
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WITHOUT MICROPLANNER:

Mattice, Michael

Microplanner

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