Constructing and Analyzing Short Science Fiction at Scale

Laure Thompson[1,2] and David Mimno[1]

1 Cornell University
2 University of Massachusetts Amherst

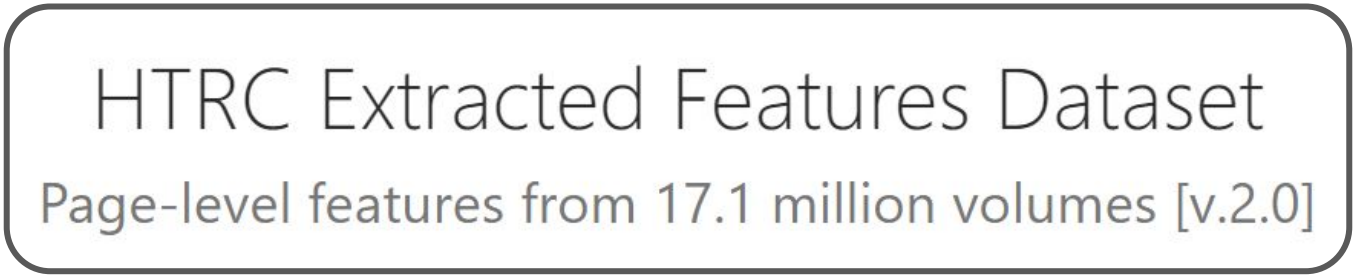
HathiTrust provides access to many anthologies

HATHI TRUST

Over 500 distinct anthologies
Over 650 volumes

...but these volumes are all in copyright

- We can use the HTRC Extracted Features Dataset



- ...but we still need a way to identify the individual stories within each anthology

ISFDB provides story-level metadata

Title: Women of Other Worlds: Excursions Through Science Fiction and Feminism **Title Record #** 103244
Editors: Helen Merrick **and** Tess Williams
Date: 1999-12-00
Type: ANTHOLOGY

- xiii • Preface (Women of Other Worlds) • essay by Helen Merrick **and** Tess Williams
- 2 • Introduction: Visualizing the Future (Women of Other Worlds) • essay by Jeanne Gomoll
- 14 • An Envoy from Senectutus: WisCon 20 Guest of Honour Speech • essay by Ursula K. Le Guin
- 20 • Handwork • poem by Rebecca Marjesdatter
- 26 • The Small Black Box of Morality • [Hwarhath] • (1996) • short story by Eleanor Arnason
- 30 • Reading Piebald Patterns in Le Guin's The Left Hand of Darkness • essay by Ellen Peel
- 42 • And She Was the Word • (1996) • short story by Tess Williams
- 62 • Of Women and Wonder: A Conversation with Suzy McKee Charnas • interview of Suzy McKee Charnas • interview by Bill Clemente
- 83 • A Beauty, a Phantom, and Two Talking Heads: The Psychology of Confinement in Suzy McKee Charnas' 'Beauty and the Opéra' • essay by Jennifer Stevenson
- 103 • Notes of a Border Crosser • essay by Susanna J. Sturgis
- 116 • From Female Man to Feminist Fan: Uncovering Herstory in the Annals of SF Fandom • essay by Helen Merrick
- 141 • A Non-Traveller Spends a Month Away from Home • essay by Jessica Amanda Salmonson
- 148 • And Salome Danced • (1994) • short story by Kelley Eskridge
- 164 • The Erotics of Gender Ambiguity: A Fem-SF Symposium • essay by Helen Merrick
- 185 • The Kidnapping of Baroness 5 • (1995) • novelette by Katherine MacLean
- 210 • Of Synners and Brainworms: Feminism on the Wire • essay by Rebecca J. Holden [as by Rebecca Holden]
- 229 • Home by the Sea • (1985) • short story by Élisabeth Vonarburg (trans. of *La maison au bord de la mer*)
- 248 • Writing from the Body • (1997) • essay by Nicola Griffith
- 262 • A Habit of Waste • (1996) • short story by Nalo Hopkinson
- 278 • Octavia Butler's Parable of the Sower: One Alternative to a Futureless Future • essay by Lisbeth Gant-Britton
- 296 • The Freedom Maze [draft] (excerpt) • short fiction by Delia Sherman

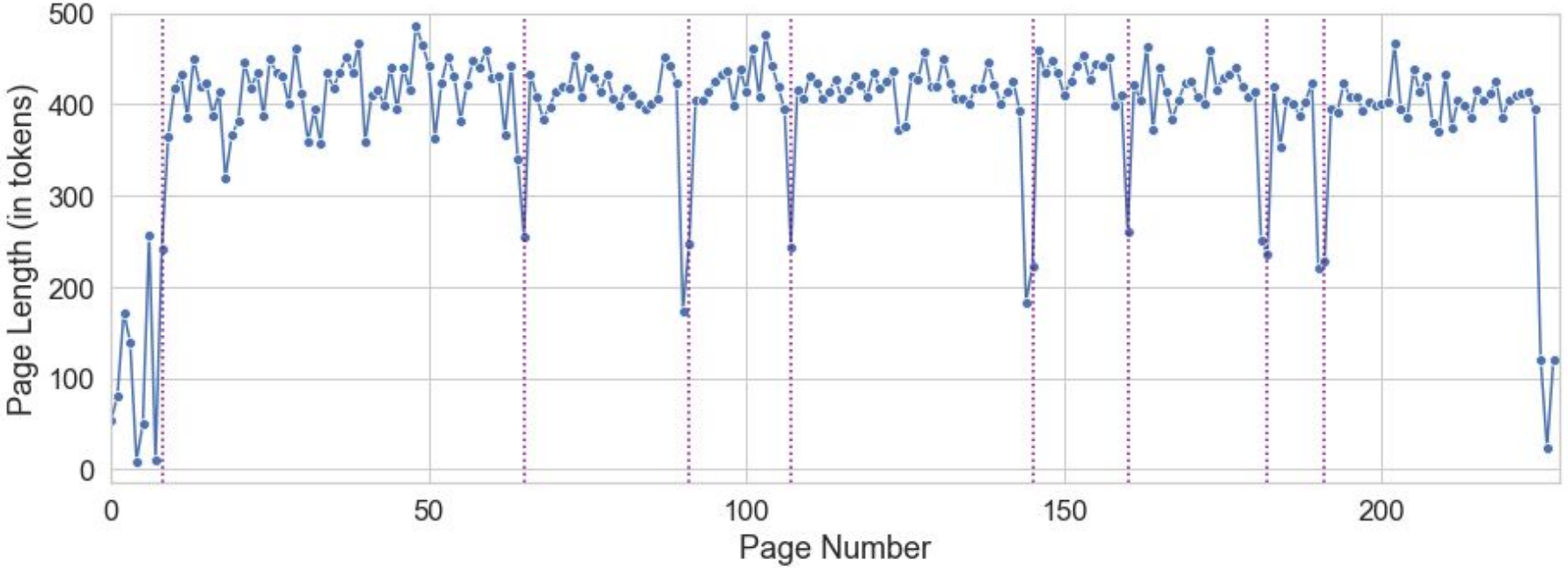
Annotated subset

- Hand-annotate page boundaries for 2 HTRC extracted features for each of 34 unique anthologies
- Headers are very useful when they exist

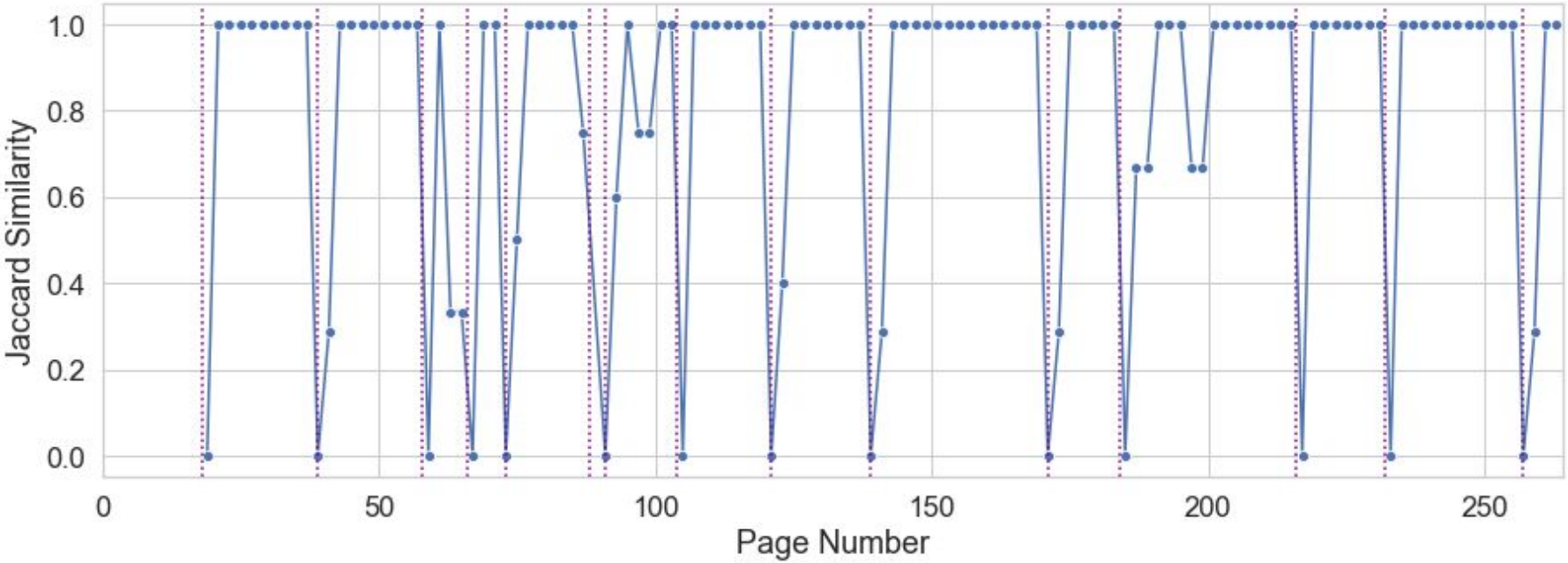
  Nalo Hopkinson's "A Habit of Waste" ⟶
  Hopkinson_NNP _JJ habit_NN waste_NN of_IN Nalo_NNP

- In case of no headers, author and title of segment tend to occur on first page

Page lengths are a useful baseline



Headers are also be useful, but may not exist



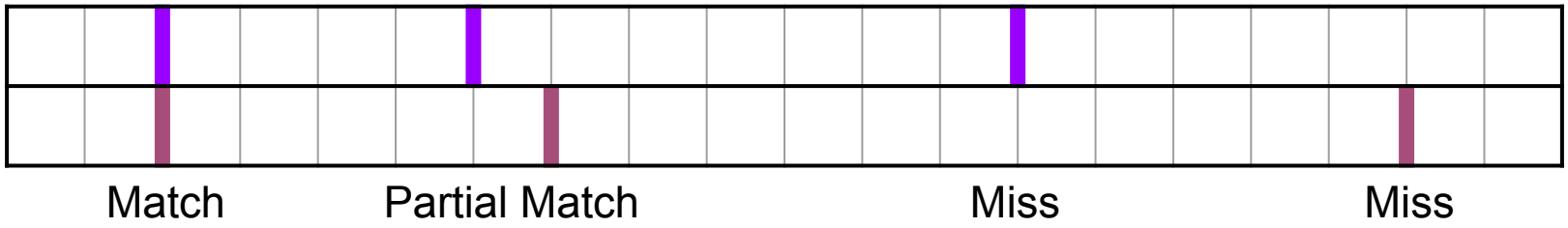
Text length and headers provide independent information; adding product features helps

	Labeled with exact predictions	Labeled within one page of predicted	Predicted within one page of labeled
all predictors	**58%**	**63%**	**93%**
- interactions*	37%	44%	79%
length only	14%	17%	67%
headers only	21%	26%	78%

* interaction features multiply inputs, for example page_length * prev_page_length

Next Steps: Use segment-based evaluation metric

- Binary predictions is a bad fit when there is a range of correct and acceptable boundary choices.
- Alternative: Boundary Similarity (Fournier 2013)
  - Boundaries can form matches, partial matches, or full misses



Next Steps: Use content-based features

- So far, we've only considered page-level formatting
- Content will also change across segments
- Idea: use vocabulary and part-of-speech similarities
  - Appearance of character names across pages
  - Proportions of nouns and verbs
  - Occurrence of rare and frequent words