NLP Researcher: Snigdha Chaturvedi

Xingya Zhao, 12/5/2017

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Snigdha Chaturvedi – Education

- A postdoctoral researcher in Dan Roth's group at the University of Pennsylvania
- Education
  - Ph.D., University of Maryland, College Park 2011 - 2016
    - Thesis: Structured Approaches to Exploring Inter-personal Relationships in Natural Language Text
    - Advisor: Dr. Hal Daumé III
  - B.Tech., Indian Institute of Technology (IIT) 2005 - 2009

Snigdha Chaturvedi – Work Experience

- Work Experience (selected)
  - Postdoctoral Researcher, UPenn 2017 – Present
    - Advisor: Dr. Dan Roth
  - Postdoctoral Researcher, UIUC 2016 - 2017
    - Advisor: Dr. Dan Roth
  - Blue Scholar, IBM Research India 2009 - 2011
- Her personal homepage: https://sites.google.com/site/snigdhac/

Snigdha Chaturvedi – Research Interest

- Natural language understanding, machine learning, text mining

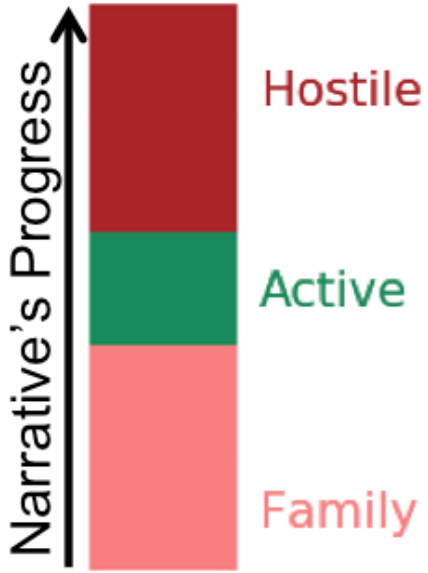
- **S Chaturvedi**, H Peng, D Roth, 'Story Comprehension for Predicting What Happens Next', Conference on Empirical Methods in Natural Language Processing (EMNLP) 2017
- H Peng, **S Chaturvedi**, D Roth, 'A Joint Model for Semantic Sequences: Frames, Entities, Sentiments', The SIGNLL Conference on Computational Natural Language Learning (CoNLL), 2017
- **S Chaturvedi**, D Goldwasser and H Daum´e III, 'Ask, and shall you receive?: Understanding Desire Fulfillment in Natural Language Text', AAAI Conference on Artificial Intelligence (AAAI), 2016

Snigdha Chaturvedi – Research Interest

- Understanding dynamic relationships between literary characters
  - **S Chaturvedi**, M Iyyer, H Daum´e III, ‘Unsupervised Learning of Evolving Relationships Between Literary Characters’, AAAI Conference on Artificial Intelligence (AAAI), 2017
  - M Iyyer, A Guha, **S Chaturvedi**, J Boyd-Graber, H Daum´e III, ‘Feuding Families and Former Friends: Unsupervised Learning for Dynamic Fictional Relationships’, Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL), 2016 (Best Paper Award)
  - **S Chaturvedi**, S Srivastava, H Daum´e III and C Dyer, ‘Modeling Evolving Relationships Between Characters in Literary Novels’, AAAI Conference on Artificial Intelligence (AAAI), 2016

Dynamic Relationships Between Literary Characters

Esteban and Clara become engaged and marry… Esteban's sister Ferula moves in with them… Ferula's feelings for Clara border on passionate love, and she and Esteban develop a rivalry over Clara's affections. One morning, Esteban comes home unexpectedly and finds Ferula in Clara's bed. Esteban kicks Ferula out of the house. As she leaves, Ferula curses Esteban to eternal loneliness.



Modeling Evolving Relationships Between Characters in Literary Novels

- Goal: learning relationship binary-variable (cooperative/non-cooperative) sequences in given narrative texts
  - Esteban and Ferula's relationship: <cooperative, non-cooperative>
- Contribution and highlights
  - Formulate the novel problem of relationship modeling in narrative text as a structured prediction task
  - Propose rich linguistic features that incorporate semantic and world knowledge
  - Present a semi-supervised framework and empirically demonstrate that it outperforms competitive baselines

Modeling Evolving Relationships Between Characters in Literary Novels

- J48: decision tree, LR: logistic regression

Model	P	R	F
J48	68.18	43.55	48.54
LR	71.93	46.77	51.48
Order 1 Model	72.36	50.64	52.52
Order 2 Model	71.62	56.45	**60.76**

Table 3: Performance comparison on the AMT dataset. The second order model based framework outperforms the one that uses a first order model and the unstructured models LR and J48.

Modeling Evolving Relationships Between Characters in Literary Novels

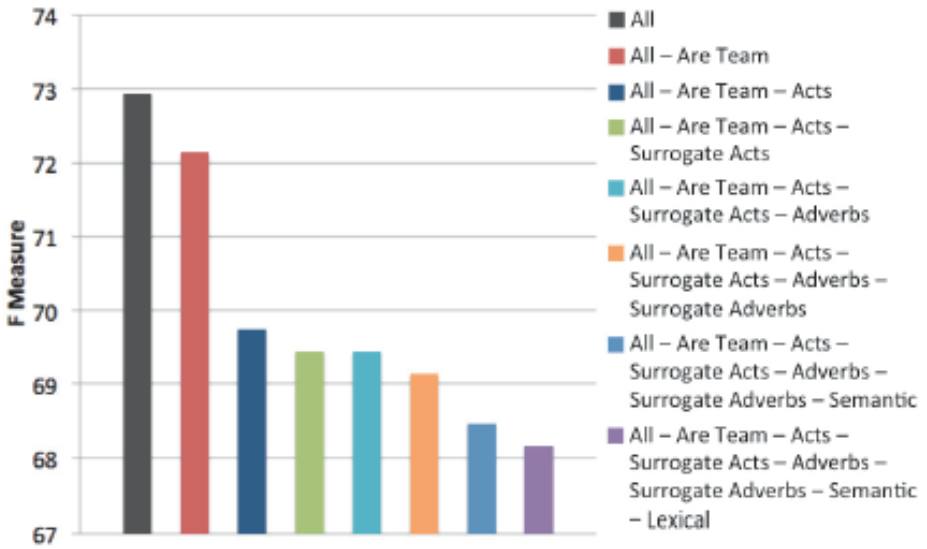
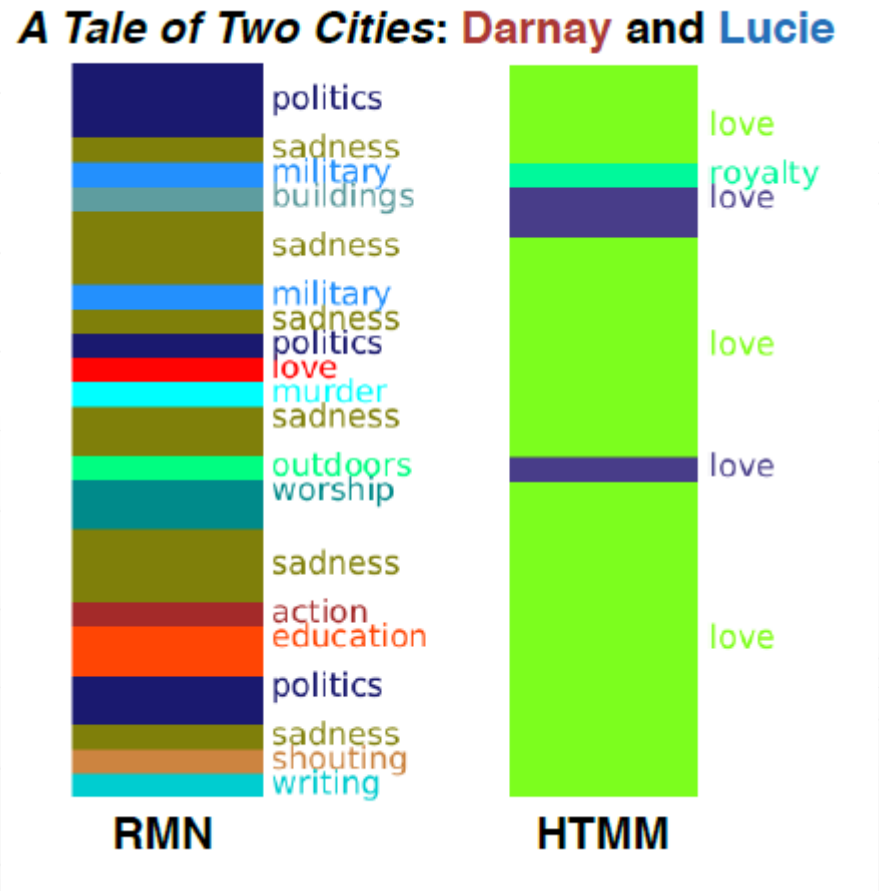


Figure 2: Ablation results on SparkNotes dataset. All represents performace with full feature-set and rest of the bars indicate performance with incrementally removing various feature-families.

Feuding Families and Former Friends: Unsupervised Learning for Dynamic Fictional Relationships

- Goal: Unsupervised relationship modeling. The model jointly learns a set of relationship descriptors as well as relationship trajectories for pairs of literary characters.
  - Esteban and Ferula's relationship: <move-in, rivalry, madness, kick-out, curse>
- Contribution and highlights
  - Propose the relationship modeling network (RMN), a novel variant of a deep recurrent auto encoder that incorporates dictionary learning to learn relationship descriptors

Feuding Families and Former Friends: Unsupervised Learning for Dynamic Fictional Relationships



Modeling Evolving Relationships Between Characters in Literary Novels

- Goal: unsupervised modeling of inter-character relationships from unstructured text
- Contribution and highlights
  - Present three models based on rich sets of linguistic features that capture various cues about relationships
  - Hidden Markov Model with Gaussian Emissions (GHMM), Penalized GHMM, and Globally Aware GHMM
  - Outperforms the RMN
    - Better generated relationship: the subjects chose Globally Avare GHMM over RMN for 66:2% of the character pairs
    - Better representation: 66:0% of the states learned by Globally Aware GHMM to be representing an inter-personal relationship, 50:0% for RMN's states