CHRIS KEDZIE

PERSONAL INFORMATION

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ABOUT

I am currently a 5th year Ph.D. student in the Department of Computer Science at Columbia University, working in the field of Natural Language Processing under Prof. Kathleen McKeown. My research has focused on applied machine learning for large scale, streaming news summarization. I am currently working on deep learning methods for content selection in text summarization problems. In general, I am interested in deep learning methods for text generation and text understanding.

PUBLICATIONS

Nov. 2018 Chris Kedzie, Kathleen McKeown, and Hal Daumé III. *Content Selection in Deep Learning Models of Summarization*

Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing

Abstract: We carry out experiments with deep learning models of summarization across the domains of news, personal stories, meetings, and medical articles in order to understand how content selection is performed. We find that many sophisticated features of state of the art extractive summarizers do not improve performance over simpler models. These results suggest that it is easier to create a summarizer for a new domain than previous work suggests and bring into question the benefit of deep learning models for summarization for those domains that do have massive datasets (i.e., news). At the same time, they suggest important questions for new research in summarization; namely, new forms of sentence representations or external knowledge sources are needed that are better suited to the summarization task.

July 2016 Chris Kedzie, Fernando Diaz, and Kathleen McKeown. *Real-Time Web Scale Event Summarization Using Sequential Decision Making*

Proceedings of the 25th International Joint Conference on Artificial Intelligence

Abstract: We present a system based on sequential decision making for the online summarization of massive document streams, such as those found on the web. Given an event of interest (e.g. "boston marathon bombing"), our system is able to filter the stream for relevance and produce a series of short text updates describing the event as it unfolds over time. Unlike previous work, our approach is able to jointly model the relevance, comprehensiveness, novelty, and timeliness required by time-sensitive queries. We demonstrate a 28.3% improvement in summary F_1 and a 43.8% improvement in time-sensitive F_1 metrics.

July 2015 Chris Kedzie, Kathleen McKeown, and Fernando Diaz. *Predicting Salient Updates for Disaster Summarization*

Proceedings of the 53nd Annual Meeting of the Association for Computational Linguistics

Abstract: During crises such as natural disasters or other human tragedies, information needs of both civilians and responders often require urgent, specialized treatment. Monitoring and summarizing a text stream during such

an event remains a difficult problem. We present a system for update summarization which predicts the salience of sentences with respect to an event and then uses these predictions to directly bias a clustering algorithm for sentence selection, increasing the quality of the updates. We use novel, disaster-specific features for salience prediction, including geo-locations and language models representing the language of disaster. Our evaluation on a standard set of retrospective events using ROUGE shows that salience prediction provides a significant improvement over other approaches.

TALKS

Nov. 2018 — Content Selection in Deep Learning Models of Summarization

Empirical Methods in Natural Language Processing

I presented our long-paper submission at the 2018 meeting of the Conference on Empirical Methods in Natural Language Processing in Brussels. See associated paper abstract.

Oct. 2016 — Machine Learning and Friends Lunch: Real-Time Web Scale Event Summarization Using Sequential Decision Making

UMass Amherst

I presented our recent summarization research at the CS department's weekly machine learning talk. See associated paper abstract.

July. 2016 — Real-Time Web Scale Event Summarization Using Sequential Decision Making

International Joint Conference on Artificial Intelligence

I presented our long-paper submission at the 2016 meeting of the International Joint Conference on Artificial Intelligence in New York City. See associated paper abstract.

Nov. 2015 — Learning 2 Summarize: TREC 2015

Temporal Summarization Track, TREC 2015

Abstract: In this talk, I present an overview of our participation in the temporal summarization track at the 2015 Text Retrieval Conference. Most of the available training data for this task consists of static judgments on returned updates, making it difficult to make use of sequential predictions in a learned model. I show how we used learning based search (SEARN, Learning2Search, LOLS) to sample realistic runs over the training streams and learn from dynamic features like previous update decisions and rolling stream observations. Our resulting system is able to build an event summary in an online fashion avoiding latency penalties while still outperforming retrospective approaches (e.g. clustering).
Joint work with Fernando Diaz.

July 2015 — Predicting Salient Updates for Disaster Summarization

Association of Computational Linguistics

I presented our long-paper submission at the 2015 meeting of the Association for Computational Linguistics in Beijing, China. See associated paper abstract.

Nov. 2014 — Columbia U. at TREC: Temporal Summarization

Temporal Summarization Track, TREC 2014

Abstract: In this talk, I present an overview of our participation in the temporal summarization track at the 2014 Text Retrieval Conference. Our submission was one of the top overall submissions for this track. Our performance gain came largely from our precision in the summary update selection stage; I outline the details of our salience regression model and affinity propagation clustering architecture, including their effect on our scores. I also address our current system shortcomings, especially our inability to explicitly control for redundancy.
Joint work with Fernando Diaz & Kathleen McKeown.

Aug. 2014 — Summarizing Disasters Over Time

Bloomberg Data Frameworks Track, KDD 2014

Abstract: We have developed a text summarization system that can generate summaries over time from web crawls on disasters. We show that our method of identifying exemplar sentences for a summary using affinity propagation clustering produces better summaries than clustering based on K-medoids as measured using Rouge on a small set of examples. A key component of our approach is the prediction of salient information using event related features based on location, temporal changes in topic, and two different language models.
Joint work with Fernando Diaz & Kathleen McKeown.

DEMOS

April 2016 Monitoring Large Scale Disasters, Data Science Day

Columbia University's Data Science Institute

During crises such as natural disasters or other human tragedies, information needs of both civilians and responders often require urgent, specialized treatment. Monitoring and summarizing important information during such an event remains a difficult problem. We present a system for monitoring online news for such disasters. Given a query: e.g. "Hurricane Sandy," our system analyzes the web, and produces a sequence of updates, brief textual descriptions about the current state of the event, as that event unfolds over time. We use novel, disaster-specific features for generating updates, including geo-locations and language models representing the language of disaster. Our demo will allow users to see updates generated for pre-run queries including: Hurricane Sandy, the Boston Marathon bombing, and 40 other large scale disasters.

DOCTORAL CONSORTIUM

July 2016 Extractive and Abstractive Event Summarization over Streaming Web Text, 25th International Joint Conference on Artificial Intelligence

SUMMER SCHOOLS

August 2016 Deep Learning Summer School at the University of Montreal

DEPARTMENTAL ACTIVITIES

Sept. 2014 – Sept. 2017 Organizer, Columbia NLP Talks

Coordinate and plan internal and visiting speakers to the NLP group at Columbia.

June 2016 – Present Organizer, Columbia NLP Reading Group

Coordinate and plan weekly reading group on current research in NLP.

WORK EXPERIENCE

Summer 2017 Research Intern, Facebook Applied Machine Learning (AML)

Facebook Research

I interned with Umut Ozertem in the AML group, focusing on click bait and hate speech detection. During my project, I developed an adversarial training method to improve performance of our convolutional neural network text classifiers. I implemented this architecture in PyTorch and Caffe2, and integrated it into the internal FBLearner system for tracking and running experiments. My project is currently in use by several teams in the AML group, and is currently under submission for a patent.

Summer 2015 Research Intern, Microsoft Research

MSR-NYC

I interned with Fernando Diaz at Microsoft Research in New York City, continuing our collaboration on streaming news summarization. I developed scalable summarization systems to provide users with brief updates of news events as they were unfolding. Our work was submitted to the Temporal Summarization Track of the 2015 Text Retrieval Conference, where we were a top performer and invited to give a talk.

Spring 2014 Teacher's Assistant, Columbia University

Columbia University

I was the TA for the class *Semantic Technologies in IBM Watson*, taught by IBM researcher Alfio Gliozzo. The class covered the various inner workings of the Jeopardy playing computer. My responsibilities included teaching several lectures on foundational natural language processing tasks and problems, and an overview of the semantic web. Along with Dr. Gliozzo, I helped guide and supervise the various student projects, one of which led to a publication at EMNLP 2014.

2008–2011 Composer's Assistant, Stimmung — New York

Stimmung
stimmung.tv

Performed audio engineering/mixing/editing and sheet music preparation for staff composers in a busy commercial music and sound post-production studio. Posted and presented work to clients. Provided general office support and correspondence. Organized and archived audio and video assets. Coordinated asset delivery to clients/post-production services. Worked on many CLEO and Emmy award winning commercial campaigns including several Super Bowl spots for such clients as: Coca-Cola, Mercedes-Benz, Kia, Levi's, and Monster.com. In addition to commercials, I also helped produce music for several independent films, documentaries, and television shows including *Reagan* (HBO), *The Rising: Rebuilding Ground Zero* (Discovery Communications), and *Journey to the Stars* (Hayden Planetarium, American Museum of Natural History).

2006-2008 Production Director, KXLU — Los Angeles

KXLU 88.9FM
kxlu.com

Worked with station directors and staff to plan concerts and events in the Los Angeles area, as well as the annual fundraiser. Supervised implementation of a new website. Coordinated the recording and broadcast of all live and pre-recorded performances and interviews at the station. Managed and researched equipment upgrades for the KXLU Production Studio.

EDUCATION

2014-Present Columbia University

PhD

Natural Language Processing · Dept. of Computer Science · Fu Foundation School of Engineering & Applied Science
Adviser: Prof. Kathleen McKeown

2013-2014 Columbia University

Master of Science

GPA: 3.87 · *Natural Language Processing* · Dept. of Computer Science · Fu Foundation School of Engineering & Applied Science
Adviser: Prof. Kathleen McKeown

2012-2013 Columbia University

GPA: 3.95 · *Post Baccalaureate Studies* · School of Continuing Education
Description: While taking introductory courses in computer science, I also worked as a research assistant for Prof. Kathleen McKeown and her student, Sara Rosenthal. Responsibilities included annotating research corpora for supervised learning systems, developing web crawlers to extract user discussions from online forums, and building research corpora for studies in automatic influence and agreement detection in natural language.

2011 Baruch College, CUNY

GPA: 4.0 · Continuing & Professional Studies
Description: I took two classes on Java and Oracle SQL development.

2004-2008 Loyola Marymount University

Bachelor of Arts

GPA: 3.34 · *Music/Recording Arts Double Major* · College of Communication and Fine Arts/School of Film and Television

COMPUTER SKILLS

Languages (Adept) English, C/C++, python, lua, java, perl, html, LaTeX

Languages (Familiar) Latin, matlab, X10, javascript, SQL, SPARQL, Linux/Bash/shell scripting

Machine Learning Frameworks PyTorch, LuaTorch, TensorFlow, Caffe2, Theano, Scientific Python Stack (Numpy, Scipy, SciKit-Learn, iPython/Jupyter Notebook, etc.), VowpalWabbit

OTHER INFORMATION

Interests Experimental Music · Pop Music · Punk Rock

November 26, 2018