AFFECT IN TEXT AND SPEECH

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As technology and human-computer interaction advances, there is an increased interest in affective computing. One of the current challenges in computational speech and text processing is addressing affective and expressive meaning, an area that has received fairly sparse attention in linguistics. Linguistic investigation in this area is motivated both by the need for scientific study of subjective language phenomena, and by useful applications such as expressive text-to-speech synthesis. The study makes contributions to the study of affect and language, by describing a novel data resource, outlining models and challenges for exploring affect in language, applying computational methods toward this problem with included empirical results, and suggesting paths for further research.

After the introduction, followed by a survey of several areas of related work in Chapter 2, Chapter 3 presents a newly developed sentence-annotated corpus resource divided into three parts for large-scale exploration of affect in texts (specifically tales). Besides covering annotation and data set description, the chapter includes a hierarchical affect model and a qualitative-interpretive examination suggesting characteristics of a subset of the data marked by high agreement in affective label assignments. Chapter 4 is devoted to experimental work on automatic affect prediction in text. Different computational methods are explored based on the labeled data set and affect hierarchy outlined in the previous chapter, with an emphasis on supervised machine learning whose results seem particularly interesting when including true affect history in the feature set. Moreover, besides contrasting classification accuracy of methods in isolation, methods' predictions are combined with weighting approaches into a joint prediction. In addition, classification with the high agreement data is specifically explored, and the impact of access to knowledge about previous affect history is contrasted empirically. Chapter 5 moves on to discuss emotion in speech. It applies interactive evolutionary computation to evolve fundamental parameters of emotional prosody in perceptual experiments with human listeners, indicating both emotion-specific trends and types of variations, and implications at the local word-level. Chapter 6 provides suggestions for continued work in related and novel areas. A concluding chapter summarizes the dissertation and its contributions.