TACL Resubmission of 1538

Original action editor: Ani Nenkova

To address the concerns of the previous reviewers, we have made the following changes:

A chief concern of the previous reviewers was that there was insufficient detail on the proposed methods. To address this, we have substantially re-written the whole paper, particularly the method sections. These now include detailed descriptions of the variational inference method to allow the method to be reproduced. We aim this description at NLP readers who do not have experience with variational inference but may need to reproduce the method, hence we also aim to give important background information and citations for further understanding the variational inference method. Our new description also clarifies the technique for integrating black-box sequence taggers, as requested by the previous reviewers.

To address criticisms that the experiments are hard to compare with prior work, we have included additional variants of our method (BSC-seq and BSC-CM without text models and without the true label transition models) that make it possible to see the effect of individual components of our model. This isolates the effects of introducing sequential dependencies into the true label model and the annotator model, allowing direct comparison with IBCC. We also make the relationships between our methods and prior work explicit so that the comparison with previous methods, including HMM-crowd, is easier to make.

For the active learning simulation, we now compare a different set of methods that also make it easier direct comparisons between methods much clearer. We clarify the uncertainty sampling method used by providing an algorithm description (algorithm 2).

To address further comments about the experiments, we have added explanations to clarify the purpose of the simulated data experiments (verifying that BSC-seq can better handle certain error types). We have also clarified the setup for training a model for prediction on unlabeled test data (section 5.6).

The literature references have also been expanded to include suggestions from the previous reviewers, as well as other additions that aim to clarify the methodology.