Thesis Abstract

Registration Number:	□ "KOU" □ "OTSU" No. *Office use only	Name:	Ikuya Yamada

Title of Thesis:

Entity Linking with a Knowledge Base

Summary of Thesis:

Entity linking (EL) is the task of detecting entity names from a document and resolving the detected names into corresponding entries in a knowledge base (e.g., Wikipedia, DBpedia, and Freebase). EL resolves the ambiguity in entity names by linking them to corresponding unambiguous identifiers of a knowledge base. Further, through EL, a document can be enriched with quality information available in a knowledge base. Therefore, EL has been widely used as a base component in various natural language processing tasks such as information extraction, information retrieval, and question answering.

In this dissertation, we propose two novel methods to significantly enhance the performance of EL. First, we describe our EL method, which is based on the joint embedding of words and entities. We also attempt to improve the performance of EL in Twitter messages. In our experiments, our proposed methods successfully outperform other state-of-the-art methods.

Furthermore, in order to validate the applicability of EL for existing applications, we provide two application examples of EL. We first propose a novel approach for enhancing the performance of named entity recognition (NER) in Twitter messages using EL. Further, we describe a new EL application that enhances a user's text reading experience by automatically converting entity names in a document into links. As a result, we confirm that EL can be effectively used for these applications.

Keywords: Entity linking, wikification, Wikipedia, named entity recognition, knowledge base