



**Dissertation Defense**  
*Doctor of Philosophy in Computer Science*

**“Linguistic Entrainment in Human-to-Human Dialogue and its application in End-to-End Dialogue Systems”**

by **Mingzhi Yu**

**Date:** November 5, 2021

**Time:** 2:30PM – 5:00PM

**Place:** [https://pitt.co1.qualtrics.com/jfe/form/SV\\_00Q52w9jB7zcWLs](https://pitt.co1.qualtrics.com/jfe/form/SV_00Q52w9jB7zcWLs)

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**Abstract:**

Entrainment is a linguistic phenomenon in which people mimic each other in their conversations. It occurs in a wide range of linguistic dimensions. Entrainment has been exploited in various natural language processing tasks related to dialogue, such as dialogue outcome prediction and dialogue response generation. However, only a few studies have attempted to incorporate entrainment into neural network-based dialogue systems systematically. The present dissertation aims to build a neural network-based end-to-end response generation model that is capable of generating diverse responses by leveraging lexical entrainment, a type of entrainment based on text features. We firstly demonstrated an automatic entrainment measure relying on conventional similarity metrics based on a bag-of-words approach. Then we show an alternative neural network-based approach to perform the same core similarity measure for entrainment quantification. Lastly, we proposed an end-to-end dialogue response generation model that controls entrainment degree to aid response variety. We focus on evaluating the effect of incorporating lexical entrainment in the end-to-end dialogue response generation model.