

# JIACHENG LI

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## EDUCATION

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<b>University of California, San Diego</b> Doctor of Philosophy. Advisor: Julian McAuley. Department of Computer Science and Engineering.	Sep 2020 - Present
<b>University of California, San Diego</b> Master of Science. Department of Computer Science and Engineering.	Sep 2018 - June 2020
<b>Nanjing University of Posts and Telecommunications</b> Bachelor of Engineering. College of Computer Science.	Sep 2014 - June 2018

## SKILLS

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Python, Tensorflow, PyTorch, SQL, MATLAB, Keras, C/C++.

## WORK EXPERIENCE

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<b>Machine Learning for Natural Language Processing Intern</b> <i>Bosch USA.</i>	June 2020 - Sep 2020
<b>Graduate Student Researcher-Machine Learning, NLP</b> <i>Center for Microbiome Innovation</i> Project: Dual Relation Network for Few-shot NOTA Relation Extraction.	Sep 2019 - June 2020
<b>Summer Research Volunteer</b> <i>Advisor: Julian McAuley</i> Project: Time Interval Aware Self-Attention for Sequential Recommendation.	June 2019 - Sep 2019

## PUBLICATIONS

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Jiacheng Li, Yujie Wang, Julian McAuley. Time Interval Aware Self-Attention for Sequential Recommendation. International Conference on Web Search and Data Mining (WSDM) 2020.

Jianmo Ni, Jiacheng Li, Julian McAuley. Justifying Recommendations using Distantly-Labeled Reviews and Fine-grained Aspect. Empirical Methods in Natural Language Processing (EMNLP) 2019.

## PROJECTS

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**SeNsER: Learning Cross-Building Sensor Metadata Tagger**  
*Research Project. Pytorch.*

- SeNsER learns a sensor metadata tagger for a new building based on its raw metadata and some existing fully annotated building.
- At the character level, it employs bidirectional neural language models to capture the shared underlying patterns between two buildings.
- At the word level, it leverages as features the k-mers existing in the fully annotated building.
- During inference, it incorporates the information obtained from sources such as Wikipedia as prior knowledge.

**Dual Relation Network for Few-shot NOTA Relation Extraction**  
*Research Project. Pytorch.*

- Propose Dual Relation Network (DuRel) to deal with few-shot none-of-the-above (NOTA) problem. DuRel detects NOTA query instances by calculating positive and negative relations.
- Adjust existing edge labeling graph neural network (EGNN) for few-shot NOTA problem.

### **Time Interval Aware Self-Attention for Sequential Recommendation**

*Research Project. Tensorflow.*

- Designed a novel time interval aware self-attention (TiSA) mechanism to learn the weight of different items, absolute position and time intervals to predict the following items.
- We proposed to view users interactions history as a sequence with different time intervals, and model different time intervals as relations between any two interactions.

### **Justifying Recommendations using Distantly-Labeled Reviews and Fined-Grained Aspects**

*Research Project. Pytorch.*

- Defined each segment as an Elementary Discourse Unit (EDU) which corresponds to a sequence of clauses.
- Annotate data and trained GRU-based (Gated Recurrent Unit) and BERT-based text classifier to identify justifications from user reviews and compared the results.
- Reference-based Seq2Seq Model: A natural language generation model based on the seq2seq model. We apply two-layer bidirectional GRU as the encoder and decoder. Use attention mechanism to incorporate aspect information to improve controlment of generation.
- Aspect Conditional Masked Language Model: The masked language model in the pretrained BERT model as our sequence decoder and add attention over the aspect encoders output.

### **Joint Force in Managing Zambezi River**

*2017 Mathematical Contest in Modeling (MCM).*

*Outstanding Winner, SIAM Award.*

- Design a new dam system to replace the old Kariba Dam on the Zambezi River.
- Investigate different facts on water flow and consider various situations under different weathers and terrains.
- Formulated the water flow balance equations.
- Used dynamic programming to get the best positions of dams implemented with Lingo.
- Used the particle swarm optimization in MATLAB optimization tools to get the most optimized volume of water should be scheduled.