

ZHENGUO CHEN

1320 Wisteria, APT 4613, Ann Arbor, MI 48104

Phone: (303) 359-7579 email: Zhenguo.Chen@colorado.edu

EDUCATION

University of Colorado Boulder, Colorado, USA

Aug 2016 - May 2018

College of Engineering and Applied Science

Master's Degree: Computer Science

GPA: 4.0

Nankai University, Tianjin, China

Aug 2012 - May 2016

B.S. in Information Security

B.A. in Law

Overall GPA: 3.5

TECHNICAL STRENGTHS

Skills Python, C++, AWS, Data Structure, Algorithm, TensorFlow, Django, Docker, Vue

PROFESSIONAL EXPERIENCE

ClinC, Inc.

June 2018 - Present

Software Engineer (Core AI R&D Team)

Ann Arbor

- Researched and enhanced ClinC Natural Language Understanding (NLU) with new capabilities, including relation extraction, recursive query handling and out-of-domain detection.
- Developed improvements for NLU models in terms of accuracy and training time, with various deep neural network models, such as **attention-BiLSTM**, **Transformer**, etc.
- Built and integrated models with business logic servers for multiple clients, including top 10 banks in US and Europe with up to **6 million** users.
- Lead multiple **production projects** which were deployed on different channels. Devised, developed and delivered end-to-end solutions for challenging customer problems.

RESEARCH EXPERIENCE

Out-of-Domain Query Detection

Jan 2020 - Present

ClinC Research Project

- Researched, optimized OOD detection models as potential solutions to improve ClinC NLU capability (improved ROC scores by around **6%**).
- Implemented Prototypical Network to support OOD detection for datasets both with and without OOD training data.
- Explored and evaluated multiple models (Proto, **Bert**, **Fasttext**, etc.) across multiple datasets.

Enhance Dialog System with Slot Relation Extraction (RE)

Nov 2019 - Present

ClinC Research Project

- Designed and conducted experiments to demonstrate the benefits of augmenting a dialog system with RE model (extract relations between entities). Paper under review for **EMNLP 2020**.
- Built state-of-the-art RE models (attention & transformer) and designed an end-to-end solution.
- Designed entity relation annotation GUI tool for scalable crowdsourcing (reduced annotation time by **70-80%**).
- Integrated RE with ClinC dialog system to support customer projects.

Slot Tree for Handling Recursive Queries

Sept 2018 - Jan 2019

ClinC Production Project

- Devised and developed algorithms to generate tree structures (Slot Tree) for named-entities.
- Applied slot tree to handle recursive queries, which was used in production.
- Designed user-friendly response generation for recursive queries.

Image Captioning Using Neural Network

Jan - May 2017

Master's Project, CU Boulder

Advisor: Chris Ketelsen

- Built Convolution Neural Network (VGG16/19) and NLU model (LSTM) to extract features and generate descriptive captions for images.
- Designed and developed web pages as an end-to-end solution for user.
- YouTube video available [here](#)

Autonomous Vehicle with Obstacle Detection

Jan - May 2017

Master's Project, CU Boulder

Advisor: Chris Heckman

- Built SLAM (Simultaneous localization and mapping) on robot for localization.
- Built real-time object detection module with OpenCV.
- Integrated modules in ROS (Robot OS) to facilitate communication between components.

NXP Asymmetric Encryption Implementation and Optimization

Jan - Jun 2016

Undergrad Dissertation, Nankai University

Advisor: Zheli Liu

- Built RSA (cryptosystem) and optimized it with Montgomery algorithm.
- Programmed and utilized NXP Fame2 co-processor to accelerate RSA encryption.
- Built ECC (cryptosystem) and optimized it with Jacobian coordinate.
- Programmed and utilized NXP Fame2 co-processor to accelerate ECC encryption.

Dual Deception Secret Sharing Improvement

Jan - Jun 2016

Undergrad Project, Nankai University

Advisor: Zhaohui Li

- Implemented Random Grid-based Visual Secret Sharing algorithm for secret sharing.
- Improved RGVSS with dual deception (hiding secret information in multiple images).
- Built dual deception RGVSS and evaluated its security.

Book Recommendation System Based on Douban Reviews

Mar 2014 - Apr 2015

Undergrad Project, Nankai University

Advisor: Jie Liu

- Collected and parsed user data from Douban (a book review website).
- Applied Lucene as recommendation engine to model users' interest.
- Designed and developed backend for final website.

TEACHING

- Teaching Assistant CSCI3155 Principle of Programming Language, CU Boulder
- Graduate Course Assistant CSCI5622 Machine Learning, CU Boulder