# ZHENGUO CHEN

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## 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

**Interests** Machine Learning, Computer Vision, Natural Language Processing
**Skills** Python, C++, TensorFlow, Pytorch, Django, Docker

## PROFESSIONAL EXPERIENCE

**Clinc, Inc.** June 2018 - Present
*Software Engineer (Core AI R&D Team)* *Ann Arbor*

· Maintained and improved Clinc NLU with various deep neural network models, such as attention-BiLSTM, Transformer, Encoder-Decoder.
· Researched and Enhanced Clinc NLU capabilities, including classification, named-entity recognition, entity-linking, and out-of-domain detection.
· Built and integrated models with business logic server for multiple clients, including top 10 banks in US, Europe with millions of users.
· Devised, developed and delivered solutions for challenging customer problems.

## RESEARCH EXPERIENCE

**Out-of-Domain Detection** Jan 2020 - Present
*Clinc Research Project*

· Implemented Prototypical Network to support OOD detection for datasets both with and without OOD training data.
· Evaluated multiple models (Proto/Bert/Fasttext/SVM) across multiple datasets.
· Researched, optimized OOD detection models as potential solutions to improve Clinc NLU capability.

**Enhance Dialog System with Slot Relation Extraction** Nov 2019 - Present
*Clinc Research Project*

· Built state-of-the-art slot relation extraction (RE) models (attention & transformer).
· Designed and conducted experiments to evaluate RE models and built an end-to-end solution.
· Integrated slot relation extractors with Clinc dialog system to support customer projects.
· Paper submitted to ACL2020.

**Slot Tree for Handling Recursive Queries** Sept 2018 - Jan 2019
*Clinc Production Project*

· Devised and developed algorithms to generate trees structure (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 Leanring, CU Boulder

## PERSONAL TRAITS

· Highly motivated and eager to learn new things.
· Ability to work as an individual as well as in group.