# SHIYU HAN

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## EDUCATION

**Dalian University of Technology | Dalian, China** *September 2019 - Present*

M.Sc. in Software Engineering

Relevant subjects: Matrix and Numerical Analysis, Network Science, Algorithm Analysis and Design, Artificial Intelligence, Advanced Computer Networks, Theory and Application of Cloud Computing and Big Data

Award: Postgraduate Scholarship

Overall GPA: 3.2/4.0

**Dalian University of Technology | Dalian, China** *September 2015 - June 2019*

B.S. in Software Engineering

Relevant subjects: Fundamentals of Mathematical Analysis in Engineering, Discrete Mathematics, C/C++ Programming, Data Structures and Algorithms, Computer Organization and Architecture

Overall GPA: 3.4/4.0

## RESEARCH EXPERIENCE

**Recurrent Attention Network Completion with Auto-regressive Graph Generative Model**

*First Author* *April 2020 - August 2021*

· Investigated generative mdoels of graphs and network completion which are meaningful for real-world and synthetic networks. Proposed a novel concept of using generative models of graphs to address the network completion problem. Finished the design and implementation of the overall experiment of the paper based on PyTorch framework. Completed the writing and modification of the overall paper.

· Learned the distribution over edges of the training graphs through an auto-regressive graph generative model to improve the inference accuracy. Found the most likely network among all generated networks which maximized the learned distribution based on the maximum-likelihood method.

· Exploited the topology of the already recovered portion of the network by using GNN and the attention mechanism to efficiently model complicated dependencies between the recovered portion and the newly inferred part.

· Outperformed state-of-the-art methods up to 80.60% in terms of the performance metric.

· WSDM 2022 Submitted

**Mining Implicit Relationships via Structure-Enhanced Graph Convolutional Networks**

*Participant* *May 2021 - Present*

· Researched related models as well as methods of relation mining and representation learning in heterogeneous graphs. Proposed a novel research topic to identify implicit relationships across heterogeneous networks. Realized 30% experiemtns of the paper based on PyTorch framework.

· Put forward a clear and generic definition of the implicit relationship in heterogeneous networks. Formalized the problem and proposed a graph convolutional network (GCN) model to infer implicit ties under explicit connections. Captured rich information in learning node-level representations by incorporating attributes from heterogeneous neighbors.

· Evaluated the scholars' impact more accurately by identifying implicit relationships among scholars and removing relational citations. Recommended reviewers to avoid fake or relational peer reviews.

· TKDD 2021 Submitted

**Type-Adaptive Graph Convolutional Network**

*Participant* *August 2019 - June 2020*

· Developed a novel type-adaptive GCN framework to model relational data in knowledge graphs. Implemented the whole experiment of the paper based on TensorFlow framework.

- Modeled complicated information in knowledge graphs with parameter sharing and mulriple normalized sums of features.
- Surpassed the traditional methods up to 11.06% in terms of the metric.
- In improvement

## PROJECT EXPERIENCE

### Defect Inspection of Precise Parts
*Major Developer*                                                                 *April 2019 - June 2019*

- Proposed algorithms to detect defects in specific parts with Python and OpenCV.
- Promoted the efficiency of detecting defects of precise parts in the factory.
- Improved the accuracy of defect inspection for specific parts by 10%.

### Solid Mechanics Simulation Experimental Software Based On Regular Grid
*lead Developer*                                                               *January 2019 - June 2019*

- Simulated the deformation experiments of specific solids under external forces and obtained the accurate experimental data.
- Realized complex mathematical calculation of solid mechanics simulation experiment through MATLAB.
- Visualized the simulation experiment results with regular quadrilateral grids via C++.

### ELOS Credit System
*Database Developer*                                                           *January 2019 - June 2019*

- Included all the functions required for the daily operation and management of the credit company.
- Completed the design and implementation of the overall database with MySQL.
- Created 50 base tables with a total of 120 attributes. Coded all interfaces of calling the database.
- Demonstrated the validity of the system by large amounts of actual user information.

### Message Board System
*Web Designer & Developer*                                                      *June 2018 - April 2019*

- Constructed the front end of the system via JSP and the Struts2 framework.
- Provided a real-time update message board system.
- Achieved some essential functions of message board including basic CRUD ( create retrieve, update, and delete) as well as user management.

### Hotel Management System
*Major Designer & Developer*                                                *January 2018 - January 2019*

- Designed the overall framework of the system.
- Undertook 60% of the code writing of the project based on Java.
- Realized the functions required by hotel daily management and operation.

### Bank Queuing System
*Web Designer & Developer*                                                      *June 2017 - March 2018*

- Finished whole client designs and optimizations with C++ and QT creator.
- Devised and Coded the front and back end interface through C++.
- Satisfied daily queue reception requirements of the bank. Promoted the efficiency of bank reception work.

## SKILLS & INTERESTS

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|---|---|
| **Computer Languages** | C/C++, Java, Python |
| **Databases** | MySQL, PostgreSQL, Microsoft SQL |
| **Deep Learning Framework** | TensorFlow, PyTorch |
| **Tools** | Visual Studio, PyCharm, MATLAB, Texstudio, Origin |
| **Interets** | Traveling, Reading(50 books a year), Basketball |