Siyuan Chen

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Education

Sun Yat-sen University, Guangzhou, China Sept. 2018 – Present

Ph.D. candidate in Computer Science and Technology (Successive Postgraduate and Doctoral Program)
Advisor: Prof. Jiahai Wang
Research Interests: Graph Neural Networks, Crowd Intelligence, Social Network Analysis

Sun Yat-sen University, Guangzhou, China Sept. 2014 – Jun. 2018

B.S. in Mathematics and Applied Mathematics

Publication

[1] **Siyuan Chen**, Jiahai Wang. 2022. Heterogeneous Interaction Modeling With Reduced Accumulated Error for Multi-Agent Trajectory Prediction. *Under review at IEEE TNNLS*.

- Designed a heterogeneous multi-agent trajectory prediction framework that dynamically infers edge-featured interaction graphs among agents, with application to the urban vehicle and pedestrian trajectory prediction.
- Proposed a heterogeneous attention mechanism to model the interactions among heterogeneous agents.
- Proposed the graph entropy and the mixup training strategy to reduced the accumulated error.

[2] **Siyuan Chen**, Jiahai Wang, Guoqing Li. 2021. Neural Relational Inference with Efficient Message Passing Mechanisms. *AAAI*.

- Extended the message passing mechanisms of graph neural networks for neural relational inference that jointly reveals the interaction structures of a dynamical system and predicts its future states.
- Proposed a relation interaction mechanism to model the coexistence of interacting relations.
- Proposed a spatio-temporal message passing mechanism to model the system dynamics.

[3] **Siyuan Chen**, Jiahai Wang, Xin Du, et al. 2020. A Novel Framework with Information Fusion and Neighborhood Enhancement for User Identity Linkage. *ECAI*.

- Proposed a unified network embedding method to integrate user information of structure, profile and content for linking accounts across social networks.
- Adopted a graph neural network to measure the overlapping degree of two users' neighborhoods.

[4] Junfa Lin, **Siyuan Chen**, Jiahai Wang. 2022. Graph Neural Networks with Dynamic and Static Representations for Social Recommendation. *DASFAA*.
[5] Xin Du, Jiahai Wang, **Siyuan Chen**, et al.. 2021. Multi-agent Deep Reinforcement Learning with Spatio-Temporal Feature Fusion for Traffic Signal Control. *ECML-PKDD*.
[6] Zehua Hu, Jiahai Wang, **Siyuan Chen**, et al. 2021. A Semi-supervised Framework with Efficient Feature Extraction and Network Alignment for User Identity Linkage. *DASFAA*.

Research Experience

Crowd Intelligence Emergence Mechanism and Evolution Method
(Supported by the National Key R&D Program of China) Dec. 2019 – Present

- Studied the interaction mechanism among individuals in the crowd intelligence system.
- Used the crowd entropy to measure and control the complexity of the crowd behavior.

Social Network Mining and Sentiment Analysis (Supported by NSFC) Sept. 2018 – Dec. 2019

- Linked accounts across online social networks via information fusion.

Project Experience

iFLYTEK Co., Ltd., Hefei, China *Smart City Business Group* Apr. 2021 – May. 2021

- Applied the model in [1] to trajectory prediction in urban scenes and reduced the prediction errors by 10%.
- Visualized the predicted trajectories and the underlying interaction graphs of traffic participants.