题目：Capsule Aggregated Attention for Vehicle Routing Problems

报告人：Niu Lingfeng, Professor, Virtual Economy and Data Science Research Center, School of Economics and Management, University of Chinese Academy of Sciences

邀请人：Yuhong Dai, Professor

时间地点：10:30-11:30 April 26 (Wednesday), N109

摘要:

Deep learning based methods have shown great potential for solving Vehicle Routing Problems (VRPs) in recent years. In the current learning based models, attention mechanism plays an important role and becomes one of the key modules for improving the performance. However, the aggregate-by-summation paradigm of attention is not expressive enough to fully capture the rich information in VRPs. To solve this problem, we propose a novel capsule aggregated attention mechanism, which utilizes capsule to store more information and applies dynamic routing for information aggregation. Besides, a soft gated capsule selector is exploited to differentiate the importance of different capsules, and the context node vector in the decoding process is modified to reflect the state changes. Based on the proposed capsule aggregated attention mechanism, we present a new graph attention network for solving VRPs under the reinforcement learning framework in this paper. Extensive numerical experiments on two typical VRPs, including traveling salesman problem and capacitated

vehicle routing problem, validate the effectiveness and efficiency of our proposed method.

报告人简介：牛凌峰，2004 年西安交通大学获学士学位，2009 年中国科学院数学与系统科学研究院获博士学位。现为中国科学院大学经济与管理学院虚拟经济与数据科学研究中心研究员，研究兴趣为最优化与机器学习。