YUTING HE

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RESEARCH INTERESTS

Machine Learning, Federated Learning, Knowledge Distillation, Incremental Learning

EDUCATION

- M.S. Computer Science   Advisor: Yiqiang Chen   GPA 3.87 / 4.0

  Institute of Computing Technology, Chinese Academy of Sciences   Sep. 2020 - Present
- B.S. Information Security   GPA 3.71 / 4.0

  Chongqing University   Sep. 2016 - Jun. 2020

HONORS & AWARDS

- AAAI 2022 Student Scholarship (granted with $250, 2022)
- E Fund Fintech Scholarship in Institute of Computing Technology (granted with 10K RMB, 2021)
- Merit Student in University of Chinese Academy of Sciences (2021, 2022)
- Third place in CCF BDCI Contest on Automatic Identification of Butterflies in The Wild Task (2020)
- Outstanding Undergraduates of Chongqing University (2020)
- National Encouragement Scholarship in Chongqing University (granted with 5K RMB, 2017)

RESEARCH EXPERIENCE & PROJECTS

Learning Critically: Selective Self Distillation in Federated Learning on Non-IID Data

Institute of Computing Technology, Chinese Academy of Sciences   Nov. 2021 – Apr. 2022

- Proposed a Selective Self-Distillation method for Federated learning (FedSSD);
- Imposed adaptive constraints on the local updates by selectively self-distilling the global model's knowledge based on the credibility estimated at both the class and sample level;
- Decoupled the distillation on each class channel by introducing an adaptive L2 loss for the logits;
- Mathematically analyzed the convergence of FedSSD.

Class-Wise Adaptive Self Distillation for Heterogeneous Federated Learning

Institute of Computing Technology, Chinese Academy of Sciences   Sep. 2021 – Nov. 2021

- Proposed a Class-wise Adaptive self-Distillation method for Federated Learning (FedCAD);
- Assessed the global model's inference confidence of different categories using an auxiliary dataset as the class-wise weight to dynamically adjust the impact of the distillation.

Development and Testing of Federated Computing Model Based on Cambrian MLU290

Institute of Computing Technology, Chinese Academy of Sciences   Mar. 2021 – Sep. 2021

- Designed a federated computing framework based on MLU290, including Logistic Regression, Random Forest, Gradient Boosting Decision Tree and Neural Network.

PUBLICATIONS

1. **Yuting He**, Yiqiang Chen, XiaoDong Yang, Hanchao Yu, Yi-Hua Huang and Yang Gu. "Learning Critically: Selective Self-Distillation in Federated Learning on Non-IID Data". IEEE Transactions on Big Data (TBD), 2022
2. **Yuting He**, Yiqiang Chen, Xiaodong Yang, Yingwei Zhang and Bixiao Zeng. "Class-Wise Adaptive Self-Distillation for Heterogeneous Federated Learning". International Workshop on Trustable, Verifiable and Auditable Federated Learning in Conjunction with AAAI 2022 (FL-AAAI-22), [Oral]
3. **Yuting He**, Yiqiang Chen, Xiaodong Yang, Yingwei Zhang and Bixiao Zeng. "Class-Wise Adaptive Self Distillation for Federated Learning on Non-IID Data (Student Abstract)". AAAI Student Abstract and Poster Program, 2022