

YUTING HE

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RESEARCH INTERESTS

Machine Learning, Federated Learning, Knowledge Distillation, Incremental Learning, Healthcare

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

RESEARCH EXPERIENCE & PROJECTS

Natural Science Foundation of China: Federated Transfer Learning Methods for Early Detection of Parkinson's Disease

Institute of Computing Technology, Chinese Academy of Sciences

Sep. 2021 – Apr. 2022

Build a multi-source heterogeneous federated model to collaboratively learn from many sources in order to eliminate the data island phenomenon.

1. 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.
2. 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 levels;
 - decoupled the distillation on each class channel by introducing an adaptive L2 loss for the logits;
 - Mathematically analyzed the convergence of FedSSD.

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 Cambrian MLU290, including Logistic Regression, Random Forest, Gradient Boosting Decision Tree and Neural Network.

PUBLICATIONS

- **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
- **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]
- **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

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)