
Electrical & Computer Engineering
D E F E N S E
Louisiana State University

**Towards Utility of Unlabeled Data and
Training Efficiency of Federated Learning**

a dissertation to be defended by

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Abstract—This research focuses on advancing machine learning in resource-constrained settings by improving self-supervised learning for Human Activity Recognition (HAR) and developing robust federated learning frameworks. It introduces Temporal Contrastive Learning in Human Activity Recognition (TCLHAR), a method leveraging adjacent time windows to reduce labeled data reliance and better model dynamic processes. Besides, the work addresses federated learning efficiency by optimizing client selection and training procedures for diverse data and latency conditions. It also proposes a Multi-Group Transmission (MGT) scheme using OFDMA to reduce stochastic variance and accelerate model convergence, and finally explores incentive mechanisms that enhance both server and client utility in large-scale federated learning deployments.

When: Thursday, 10 April 2025, 8:30 - 9:30 (Public Portion)

Where: Room 3316E Patrick F. Taylor Hall

Info: <https://www.lsu.edu/eng/ece/seminar>

