Special Session 8 - Program Schedule

Federated Learning on Big Data

Organizers

Prof. Francesco Piccialli, University of Naples Federico II, Italy
Dr. Diletta Chiaro, University of Naples Federico II, Italy
Prof. David Camacho, Universidad Politecnica de Matrid, Spain
Prof. Antonella Guzzo, University of Calabria, Italy
Prof. Jerry Chun-Wei Lin, Western Norway University of Applied Sciences, Norway

December 15-16, 2024, Washington DC, USA

Hyatt Regency Washington on Capitol Hill, Regency - C and Glacier Rooms

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LEGEND: In Person [IP], Remove Live [RL], Remote Video [RV]
Each presenter is allocated a total of 15 minutes: 12 minutes for the presentation + 3 minutes for Q&A.

Sunday, December 15, 2024

9:00 - 10:00 | Regency - C

***Session Chair*: Dr. Diletta Chiaro**

- **Introduction and Welcome Speech**: Dr. Diletta Chiaro
- **Title**: ACFed : Communication-Efficient & Class-Balancing Federated Learning with Adaptive Consensus Dropout & Model Quantization (**Paper ID**: SP10226) ***[IP]***
  Authors: Shaif Chowdhury, Aaron Carney, Greg Hamerly, and Greg Speegle
- **Title**: Collaboratively Learning Federated Models from Noisy Decentralized Data (**Paper ID**: SP10204) ***[IP]***
  Authors: Haoyuan Li, Mathias Funk, Nezihe Merve Gürel, and Aaqib Saeed
- **Title**: ELFS: Entropy-based Loss Function Selection for Global Model Accuracy in Federated Learning (**Paper ID**: SP10265) ***[IP]***
  Authors: Sunghwan Park, Sangho Park, Sunwoo Na, Yeseul Chang, and Jaewoo Lee

10:00 - 10:30 | TBA

Coffee Break

10:30 - 13:00 | Regency - C

***Session Chair*: Dr. Diletta Chiaro**

- **Title**: Training Fair Models in Federated Learning without Data Privacy Infringement (**Paper ID**: SP10211) ***[IP]***
  Authors: Xin Che, Jingdi Hu, Zirui Zhou, Yong Zhang, and Lingyang Chu
- **Title**: Federated Recommendation via Hybrid Retrieval Augmented Generation (**Paper ID**: SP10215) ***[IP]***
  Authors: Huimin Zeng, Zhenrui Yue, Qian Jiang, and Dong Wang

- **Title**: Overcoming Data Imbalance in Federated Learning with Calibration Weighting (**Paper ID**: SP10216) ***[IP]***
  Authors: Nathaniel Kang, Yugyeong Lim, and Jongho Im
- **Title**: Client Specific Dynamic Aggregation for Non-IID Federated Learning (**Paper ID**: SP10219) ***[IP]***
  Authors: Vincenzo Altomare, Dipanwita Thakur, Antonella Guzzo, and Francesco Piccialli
- **Title**: FLeNS: Federated Learning with Enhanced Nesterov-Newton Sketch (**Paper ID**: SP10218) ***[RV]***
  Authors: Sunny Gupta, Mohit Jindal, Pankhi Kashyap, Pranav Jeevan, and Amit Sethi
- **Title**: Ti-skol: A Modular Federated Learning Framework Supporting Security Countermeasure Composition (**Paper ID**: SP10210) ***[IP]***
  Authors: Divi De Lacour, Marc Lacoste, Mario Südholt, and Jacques Traoré
- **Title**: Federated Learning Meets Blockchain: A Kafka-ML Integration for reliable model training using data streams (**Paper ID**: SP10229) ***[IP]***
  Authors: Antonio Jesús Chaves, Cristian Martín, Kwang Soon Kim, Adnan Shahid, and Manuel Díaz
- **Title**: Privacy-Preserving Federated Learning for Science: Challenges and Research Directions (**Paper ID**: SP10272) ***[IP]***
  Authors: Kibaek Kim, Krishnan Raghavan, Olivera Kotevska, Matthieu Dorier, Ravi Madduri, Minseok Ryu, Todd Munson, Thomas Flynn, Ai Kagawa, Byung-Jun Yoon, Christian Engelmann, and Farzad Yousefian
- **Title**: Revisiting System-Heterogeneous Federated Learning through Dynamic Model Search (**Paper ID**: SP10220) ***[RV]***
  Authors: Dixi Yao
- **Title**: FedRAL: Cost-Effective Distributed Annotation via Federated Reinforced Active Learning (**Paper ID**: SP10253) ***[RV]***
  Authors: Yannis Lazaridis, Anestis Kastellos, Athanasios Psaltis, and Petros Daras

13:00 - 14:00 | TBA

Lunch Break (not provided)

14:00 - 16:00 | Regency - C

***Session Chair*: Dr. Dipanwita Thakur**

- **Title**: Boosting Federated Learning with Diffusion Models for Non-IID and Imbalanced Data (**Paper ID**: SP10231) ***[IP]***
  Authors: Maximilian Andreas Hoefler, Tatsiana Mazouka, Karsten Mueller, and Wojciech Samek
- **Title**: Tackling Data Heterogeneity in Federated Learning through Global Density Estimation (**Paper ID**: BigD472) ***[RL]***
  Authors: Sagnik Ghosh, Avinash Kushwaha, and Dinesh Singh
- **Title**: Collaborative and Federated Black-box Optimization: A Bayesian Optimization Perspective (**Paper ID**: SP10264) ***[RL]***

Authors: Raed Al Kontar

- **Title**: Fuzzy Federated Multi-Label Feature Selection: Reinforcement Learning and Ant Colony Optimization (**Paper ID**: SP10244) ***[IP]***
  Authors: Afsaneh Mahanipour and Hana Khamfroush
- **Title**: One-Shot Clustering for Federated Learning (**Paper ID**: SP10245) ***[IP]***
  Authors: Maciej Krzysztof Zuziak, Roberto Pellungrini, and Salvatore Rinzivillo
- **Title**: A Defense Mechanism Against LOKI Attacks in Federated Learning for Enhancing Big Data Privacy in Mobile Systems (**Paper ID**: SP10246) ***[IP]***
  Authors: Faria Nawshin, Devrim Unal, and Ponnuthurai Suganthan
- **Title**: A Survey on Model-heterogeneous Federated Learning: Problems, Methods, and Prospects (**Paper ID**: SP10224) ***[IP]***
  Authors: Boyu Fan, Siyang Jiang, Xiang Su, Sasu Tarkoma, and Pan Hui
- **Title**: Privacy-Preserving Federated Interpretability (**Paper ID**: SP10254) ***[RV]***
  Authors: Azra Abtahi, Amin Aminifar, and Amir Aminifar

16:00 - 16:30 | TBA

Coffee Break

16:30 - 18:00 | Regency - C

***Session Chair*: Dr. Sara Amitrano**

- **Title**: Evaluating Federated Dino’s performance on thesegmentation task across diverse domains (**Paper ID**: SP10232) ***[IP]***
  Authors: Marko Harasic, Dennis Lehmann, and Adrian Paschke
- **Title**: Federated Privacy-Preserving Visualization: A Vision Paper (**Paper ID**: SP10239) ***[IP]***
  Authors: Ye Tao, Anand Sarwate, Sandeep Panta, Sergey Plis, and Vince Calhoun
- **Title**: Leveraging MTD to Mitigate Poisoning Attacks in Decentralized FL with Non-IID Data (**Paper ID**: SP10225) ***[RV]***
  Authors: Chao Feng, Alberto Huertas CeldrÃ¡n, Zien Zeng, Zi Ye, Jan von der Assen, Gerome Bovet, and Burkhard Stiller
- **Title**: Federated Learning Governance using Eclipse Dataspace Components Connectors (**Paper ID**: SP10228) ***[RV]***
  Authors: Angela Mitrovska, Marcel Fernandez Rosas, Pooyan Safari, Behnam Shariati, Johannes Karl Fischer, and Ronald Freund
- **Title**: Optimizing Legal Information Access: Federated Search and RAG for Secure AI-Powered Legal Solutions (**Paper ID**: SP10267) ***[RV]***
  Authors: Flora Amato, Egidia Cirillo, Mattia Fonisto, and Alberto Moccardi
- **Title**: Dynamic Topology Optimization for Efficient and Decentralised Federated Learning (**Paper ID**: SP10269) ***[RV]***
  Authors: Danilo Menegatti, Alessandro Giuseppi, Cecilia Poli, and Antonio Pietrabissa
- **Title**: FedBlock: A Blockchain Approach to Federated Learning against Backdoor Attacks (**Paper ID**: SP10240) ***[RV]***
  Authors: Duong Nguyen, Phi Le Nguyen, Truong Nguyen, Hieu Pham, and Duc Tran

- **Title**: Federated Focal Modulated UNet for Cardiovascular Image Segmentation (**Paper ID**: SP10227) ***[RV]***
  Authors: Asjad Khan, Abdul Qayyum, Moona Mazher, Usman Naseem, Tariq Khan, Steven Niederer, and Imran Razzak
- **Title**: Insurance Anti-fraud based on FL-WOE Encoding for Vertical Federated Learning (**Paper ID**: SP10234) ***[RV]***
  Authors: Wenyou Du, Haihang Wang, Jiaming Shen, Guanglei Meng, He Li, and Wei Zhou
- **Title**: FedISMH: Federated Learning Via Inference Similarity for Model Heterogeneous (**Paper ID**: SP10248) ***[RV]***
  Authors: Yongdong Li, Li-e Wang, zhigang Sun, Xianxian Li, Hengtong Chang, Jinke Xu, and Caiyi Lin

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Monday, December 16, 2024

Session Chair: **Prof. Antonella Guzzo**

10:30 - 13:00 | Glacier

- **Title**: Exploring Parameter-Efficient Fine-Tuning to Enable Foundation Models in Federated Learning (**Paper ID**: SP10273) ***[IP]***
  Authors: Guangyu Sun, Umar Khalid, Matias Mendieta, Pu Wang, and Chen Chen
- **Title**: Data Efficient Transformers for Wearable Sensor Analysis in Centralized and Federated Environments (**Paper ID**: SP10230) ***[IP]***
  Authors: Jamie McQuire, Paul Watson, Nick Wright, Hugo Hiden, and Michael Catt
- **Title**: Survival Model Optimization via Federated Learning: A Study Combining Simulations and Experiments (**Paper ID**: SP10251) ***[IP]***
  Authors: Francesco Casadei, Luciana Carota, Gianluca Asti, Saverio D'Amico, Davide Piscia, Santiago Zazo, Patricia A. Apellániz, Juan Parras et al.
- **Title**: FedUNRAN: On-device Federated Unlearning via Random Labels (**Paper ID**: SP10252) ***[IP]***
  Authors: Alessio Mora, Luca Dominici, and Paolo Bellavista
- **Title**: Data infrastructure for integrating clinical data in the large-scale international ORCHESTRA cohort: from data import to federated analysis (**Paper ID**: SP10255) ***[IP]***
  Authors: Miroslav Puskaric, Hammam Abu Attieh, Fabian Prasser, Roy Gusinow, Chiara Dellacasa, Elisa Rossi, Juan Mata Naranjo, Lorenzo Maria Canziani et al.
- **Title**: Pan-Cancer Tumor Infiltrating Lymphocyte Detection based on Federated Learning (**Paper ID**: SP10256) ***[IP]***
  Authors: Ujjwal Baid, Spyridon Bakas, Sarthak Pati, Rajarshi Gupta, Erich Bremer, Shahira Abousamra, Siddhesh Thakur, and Joel Saltz
- **Title**: LIA: Privacy-Preserving Data Quality Evaluation in Federated Learning Using a Lazy Influence Approximation (**Paper ID**: SP10257) ***[IP]***
  Authors: Ljubomir Rokvic, Panayiotis Danassis, Sai Praneeth Karimireddy, and Boi Faltings
- **Title**: Discovering Communities With Clustered Federated Learning (**Paper ID**: SP10258) ***[IP]***

Authors: Mickael Bettinelli, Alexandre Benoit, and Kévin Grandjean

- **Title**: Communication-Efficient Multi-Modal Federated Learning via Dynamic Client-Modality Matching (**Paper ID**: SP10237) ***[RV]***
  Authors: Tan LI, Yanming Gong, Hai Liu, Zhen Chen, and Linqi Song

13:00 - 14:00 | TBA

Lunch Break

14:00 - 16:00 | Glacier

***Session Chair*: Dr. Diletta Chiaro**

- **Title**: Enhancing Federated Learning for Confidential Sensor Data Aggregation in IoMT Environments (**Paper ID**: SP10260) ***[IP]***
  Authors: Dagmawit Tadesse Aga and Madhuri Siddula
- **Title**: Federated Multi-task Learning in Distributed Networks (**Paper ID**: SP10261) ***[IP]***
  Authors: Lingzhou Hong and Alfredo Garcia
- **Title**: Federated Kolmogorov-Arnold Networks for Health Data Analysis: A Study Using ECG Signal (**Paper ID**: SP10263) ***[IP]***
  Authors: Sileshi Nibret Zeleke and Mario Bochicchio
- **Title**: Federated Objective: Assessing Client Truthfulness in Federated Learning (**Paper ID**: SP10268) ***[IP]***
  Authors: Marco Garofalo, Alessio Catalfamo, Mario Colosi, and Massimo Villari
- **Title**: Toward Efficient Homomorphic Encryption-Based Federated Learning: A Magnitude-Sensitivity Approach (**Paper ID**: SP10271) ***[IP]***
  Authors: Ren-Yi Huang, Dumindu Samaraweera, and J. Morris Chang
- **Title**: MedTimeSplit: Continual dataset partitioning to mimic real-world settings for federated learning on Non-IID medical image data (**Paper ID**: SP10275) ***[IP]***
  Authors: Erikson Julio de Aguiar, Agma J. M. Traina, and Sumi Helal
- **Title**: FedPAE: Peer-Adaptive Ensemble Learning for Asynchronous and Model-Heterogeneous Federated Learning (**Paper ID**: SP10277) ***[IP]***
  Authors: Brianna Mueller, W. Nick Street, Stephen Baek, Qihang Lin, Jingyi Yang, and Yankun Huang
- **Title**: Efficient Federated Unlearning with Adaptive Differential Privacy Preservation (**Paper ID**: BigD458) ***[IP]***
  Authors: Yu Jiang, Xindi Tong, Ziyao Liu, Huanyi Ye, Chee Wei Tan, and Kwok-Yan Lam

16:00 - 16:30 | TBA

Coffee Break

16:30 - 18:30 | Glacier

***Session Chair*: Dr. Dipanwita Thakur**

- **Title**: Drift Detection and Adaptation for Federated Learning in IoT with Adaptive Device Management (**Paper ID**: SP10274) ***[IP]***
  Authors: Shuang Zhou, Aniruddha Gokhale, Abhishek Dubey, Shashank Shekhar, and Ajay Chhokra
- **Title**: Decentralized Federated Learning: Model Update Tracking Under Imperfect Information Sharing (**Paper ID**: SP10247) ***[IP]***
  Authors: Vishnu Pandi Chellapandi, Antesh Upadhyay, Abolfazl Hashemi, and Stanislaw Zak
- **Title**: LIFE: Leader-driven Hierarchical & Inclusive Federated Learning (**Paper ID**: SP10206) ***[RL]***
  Authors: Wenhao Li, Christos Anagnostopoulos, Shameem Puthiya Parambath, and Kevin Bryson
- **Title**: DeltaMask: Minimizing Communication in Federated Fine-Tuning of Vision Foundation Models (**Paper ID**: SP10202) ***[IP]***
  Authors: Vasileios Tsouvalas, Yuki M Asano, and Aaqib Saeed
- **Title**: Ensuring Trustworthiness in Decentralized Systems through Federated Distillation and Feature Mixing (**Paper ID**: SP10262) ***[RL]***
  Authors: Christos Chatzikonstantinou, Athanasios Psaltis, Charalampos Patrikakis, and Petros Daras
- **Title**: Dynamic Model Selection for Asynchronous Federated Learning in IoBT Scenarios (**Paper ID**: SP10201) ***[RV]***
  Authors: Earl Tankard, Jr., Desta Haileselassie Hagos, and Danda Rawat
- **Title**: LSTM-Based Unsupervised Anomaly Detection in High-Performance Computing: A Federated Learning Approach (**Paper ID**: SP10203) ***[RV]***
  Authors: Emmen Farooq and Andrea Borghesi
- **Title**: Defending Against Inference and Backdoor Attacks in Vertical Federated Learning via Mutual Information Regularization (**Paper ID**: SP10205) ***[RV]***
  Authors: Tianyuan Zou, Yang Liu, Xiaozhou Ye, Ye Ouyang, and Ya-Qin Zhang
- **Title**: DHFM-FLM: A Dynamic Hierarchical Federated Learning Mechanism for Financial Models under Client Resource Heterogeneity (**Paper ID**: SP10217) ***[RV]***
  Authors: Kangning Yin, Zhen Ding, Shaoqi Hou, Xinhui Ji, Guangqiang Yin, and Zhiguo Wang