2026 IEEE 12th International Conference on Big Data Computing Service and Machine Learning Applications (BigDataService 2026)

Fukuoka, Japan
27-30 July 2026

IEEE Catalog Number: CFP26A91-POD
ISBN: 979-8-3195-1802-6

IEEE
Advancing Technology for Humanity

Copyright © 2026, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP26A91-POD
ISBN (Print-On-Demand):	979-8-3195-1802-6
ISBN (Online):	979-8-3195-1801-9
ISSN:	2996-2269

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA

Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com



TABLE OF CONTENTS

Searching for Creativity in Computing: Why Not Involve Ugliness? 1
Xiaoting Chen, Hongji Yang

Benchmarking Optimiser Choice and Privacy-Risk Dynamics in Non-IID Federated Learning 9
Imowo J. Enang, Joffrey L. Leevy, Preston Billion-Polak, Taghi M. Khoshgoftaar

LLM-ReSum: A Framework for LLM Reflective Summarization Through Self-Evaluation 24
Huyen Nguyen, Haoxuan Zhang, Yang Zhang, Haihua Chen, Junhua Ding

Effective Traffic Routing under Disastrous Events Through Machine Learning 40
Eric Itemuagbor, Lin Li, Lijun Qian

Resume Bullet Point Enhancement: A Multi-Model Fine-Tuning Comparative Study 48
Vedant Gupta, Sumedh Kale, Navaneeth Sai Nidadavolu, Thomas H. Austin, Navrati Saxena
William B. Andreopoulos

A Reproducible and Budget-Aware Framework for Evaluating Local Retrieval-Augmented Generation (RAG) Robustness to Perturbations 56
Rahul Reddy Gangapuram, William B. Andreopoulos

OASA-KGQA: Ontology-Aware Semantic Agent for Knowledge Graph Question Answering 64
Zahra Fereidooni, Marco Fanfani, Gianni Pantaleo, Paolo Nesi

SpartanAI: An AI Agent for Automated Course Review 72
Pratik Korat, Darshan Arunbhai Patel, Magdalini Eirinaki, Wencen Wu, Yingjie Liu, Barbra Burch

Standards-Aligned Ethical Gating and Decision Telemetry for LLM-Assisted Mobile Robot Navigation: A Simulation Study 80
Preet Kamalnayan Pandit, Aryan Singh, Hiten Bharatkumar Galiya, Wencen Wu

InstructCoT: Bridging Instruction Tuning and Chain-of-Thought Reasoning for Scalable Vision-Language Models 88
Eunsung You, Sangyup Oh

Epistemic-Pedagogical Retrieval-Augmented Generation as a Service for Educational Multi-Agent Systems 93
Alberto Matilla-Molina, Juan M. Dodero, Andrés Muñoz

Mood to Music: Enhancing Audible Enjoyment 101
Brian Ngo, Kai Llora, Kanika Sood

Accelerating Paypal's Commerce Agent with Speculative Decoding: An Empirical Study on EAGLE3 with Fine-Tuned Nemotron Models 107
Ally Qin, Jian Wan, Sarat Mudunuri, Srinivasan Manoharan

SYNAPX: Explainable Anticancer Drug Synergy Prediction via SHAP Analysis 111
Yazhini Kalaignan, Yepeng Ding

Effectiveness of Student-Centered Fine-Tuning of Large Language Models for Mental Health Support 119
Sarthak Musmade, Lu Liu

Agentic Data Services: A Control-Plane Architecture for Adaptive Data Workflows 125
Alexander Chernov

Scalable Production Telemetry Reconstruction for Behavioral Analytics in Big Data Services 130
Wai-Pui Wilbur Kwan, Yun-Cheng Tsai

Fair Influence Maximization with Reverse Influence Sampling Boosted Multi-Objective Genetic Algorithm 138
Akash Janardhan Srinivas, Petros Potikas, William Andreopoulos, Katerina Potika

A Nationwide Longitudinal Survival Analysis of Retention Among New Immigrant Language Teachers 146
Dun-Cheng Chang, Shinyi Lin, Ming-Hsueh Tsai

From Prediction to Action: A Predict–Validate–Act Framework for CVE Vulnerability Triage 154
Christopher Beddies, Vincenzo Bonaiuto, Stefan Kubica, Bernd Heimer, Bernd Eylert

Practical Quantum Portfolio Optimization Under Discrete Lot Constraints with CVaR-Based Evaluation for the Taiwan Stock Market 162
Yun-Ching Lu, Tzung-Her Chen

Degrading Trustworthiness in Cross-Domain Recommendation via Popularity Bias Poisoning 167
Yi-Tang Fang, Po-An Chen, Yung-Shan Hsu, Szu-Hao Huang, Chiao-Ting Chen

Comparing Traditional NLP and LLMs for Dementia Detection: Underdiagnosis in the Pitt Corpus 169
Donghyeon Kim, Eunyoung Kim

Bio-Imaging Analysis Systems Using a FPGA Platform 171
Yu-Jie Chen, Jia-Yun Chou, Meng-Hua Yen

Constructing Tactical Main-Purpose Proxy Labels from Observational Baseball Data via Selective and Hierarchical Labeling 173
Yuto Kanoh, Takuichi Nishimura

Coordinate-Aware Boundary Refinement for Camouflaged Object Detection 175
Donghun Seok, Chulhee Lee

Human Activity Recognition Using Smart Glasses 177
Dheeraj Kumar Alla, Sayma Akther

Generalizable Physical Therapy Exercise Classification from Wearable IMU Data Using LOSO Evaluation 179
Nathan Choi, Lawrence Cuenco, Anas Durrani, Tarif Khan, Ayman Rabia, Sayma Akther

A Comprehensive Review of Radio Signal Classification Techniques 184
Arielle Shnayder, Manan Choksi, Mahima Agumbe Suresh

Enhanced Edge Travel Time Estimation Considering Vehicle-State and Relative-Speed Features 186
Shuya Nakano, Sooksan Panichpapiboon, Elis Kulla

Sustainable Face Recognition on Low-Power Devices with VQ-VAE Embeddings 193
Christos Chronis, George Th. Papadopoulos, Iraklis Varlamis

Sensorless Knee–Wall Contact Detection from a Monocular Side-View Camera via LBP Texture Segmentation and RANSAC Line Fitting 200
Shura Osako, Hiroyuki Fujioka

Pedestrian Flow Design and Evaluation for Large-Scale Outdoor Events Using Location Data 204
Hiroyuki Ishida, Yuma Taguchi, Yoshinao Ishii, Takashi Machida, Akira Yoshioka

Maximum Mean Discrepancy for Concept Drift Detection in Malware Classification Models 209
Christofer Washington Berruz Chungata, Martin Jureček, Katerina Potika, Mark Stamp

Selective Invariance Violations in Large Language Model Moral Judgment: A Geometric Framework for Behavioral Manipulation Detection 217
Andrew H. Bond

A Local Middleware for Privacy-Preserving LLM Inference via Reversible Entity Substitution 225
Aditya Vishwakarma, Wencen Wu

A Service-Oriented Modular Architecture for Domain-Adaptive Retrieval-Augmented Generation 230
Sruthi Satyavarapu, Pramod Gupta, Mohammed Fahad

LLM Semantic-Aware Categorical Feature Engineering for Federated Learning Systems: IoT Heterogeneous Metadata Case Study 238
Enrico Collini, Luciano A. Ipsaro Palesi, Paolo Nesi, Lapo Tinacci

Design of a Distributed Semantic Analysis System for Scalable Processing of Heterogeneous Text Data 246
Yen-Yu Chang, Meng-Che Tsai, Yu-Chen Chien, Yu-Chen Chien, Chia-Kai Chang

Effect of Inducing Point Selection Strategies on Digital Ink Compression via Sparse Gaussian Process Regression 251
Yuumi Sakino, Hiroyuki Fujioka

Shift-Aware Operator Selection for Label-Free Test-Time Calibration in Cross-Domain Dataset 256
Manasa Deshagouni, Sayma Akther

Multi-Scale Alcohol Consumption Behavior Detection from Wearable AI 264
Ananya Penuballi, Nada Attar, Sayma Akther