

Programme séminaire annuel e-Adapt / e-Adapt annual workshop programme

Date et lieu / Date and location

Lundi 15 juin après-midi et mardi 16 juin matin / Monday June 15th afternoon
and Tuesday June 16th morning

Salle C21 bâtiment Orbigny / Room C21 Orbigny building

Organisation du séminaire / Workshop planning

Lundi 15 juin / Monday June 15th

13:45 Accueil et mot d'introduction - Ronan Champagnat, responsable de
l'équipe e-Adapt

13:50 Point sur les dépôts des publications sur HAL, Mourad Rabah

14:00 « Exploitation des Données Big Data et Solutions de Maintenance
Prédictive pour les Trains à très Grande Vitesse », Majed El Assal, travaux
de thèse

14:25 « Optimizing Agentic Systems via Process Mining: Modeling, Analyzing,
and Improving », Clément Adandé, travaux de thèse

14:50 « Towards Trustworthy Sensitive Document Classification with Explainable
AI », Mouhamet Ndiaye, travaux de thèse.

15:15 « Towards Coordinated Microservice Caching, Placement, and Migration in
6G-V2X Vehicular Edge Systems », Djad Benguerra, travaux de thèse

15:40-15:50 Pause café/Coffee break

15:50 **Séminaire Labo** « A Decade of Research on Cloud (Storage) Systems: A
Retrospective », Jalil Boukhobza, Professeur des Universités à l'ENSTA
Brest (<https://webperso.ensta.fr/boukhobza/>)

Abstract: This presentation looks back on ten years of research on cloud systems. It explores how to improve the management of data and task placement across diverse and heterogeneous environments combining different types of storage and computing resources. The work focuses on developing methods to monitor, analyze, and optimize the use of these resources, relying on models of cost, performance, and prediction. By integrating approaches from operation research and artificial intelligence, the research aims to make cloud infrastructures more efficient, adaptive, and sustainable.

- 16:40 « TopoSentinel: A Topology-Aware Defense Against Backdoor Attacks in Federated Learning », Ayoub Bellachia, travaux de thèse
- 17:05 « One-shot Battery Prognostics with Ultra-Early cycle data under Dynamic Operational Conditions », Luan Lopes Dos Santos, travaux de thèse
- 17:30 « Utilisation de l'IA générative et des grands modèles de langage pour le développement d'une approche conversationnelle de la gestion des réseaux dans le continuum IoT–Edge–Cloud », Lounes Belguessoum, travaux de thèse

Mardi 16 juin / Tuesday June 16th

Les présentations du mardi peuvent être suivies en visio :

<https://teams.microsoft.com/meet/399216722707972?p=6w4iBQwkj9U37hmtS7>

- 9:00 « Amélioration de l'acceptation et de l'expérience utilisateur des navettes autonomes grâce à l'interaction humain-machine », Ibrahim Cherrate, PhD work in progress
- 9:25 « Learning Path Recommendation Combining Process Mining and Deep Learning: Thesis Progress », Sana Maghraoui, PhD work in progress
- 9:50 « Étude et Mise en œuvre d'une Méthode d'Accompagnement et de Personnalisation des Scénarios d'Apprentissage », Amira Abbès, PhD work in progress
- 10:15-10:30 Coffe break
- 10:30 « Optimizing Immersive Services with Parallel In-Network Rendering and Deep RL », Dr. Adyson Maya, work published in IEEE Transactions on Machine Learning in Communications and Networking

Abstract: This paper addresses the challenge of delivering low-latency, scalable immersive experiences by exploiting a hybrid continuum of cloud, edge, and In-Network Computing (INC) resources. Delivering such experiences requires transferring large volumes of digital assets of varying sizes, including static scene elements associated with both service-specific and user-specific components. We propose separating these elements within an in-network rendering farm while dynamically caching popular assets and synchronizing rapidly changing user-centric data at INC, Edge, or Cloud nodes. Efficient orchestration of these heterogeneous resources is achieved through a multi-objective optimization framework that jointly maximizes resource efficiency and user request acceptance while minimizing end-to-end latency. The resulting optimization problem is solved using a Deep Reinforcement Learning (DRL) framework that dynamically assigns functions across the compute continuum in real time. In addition, popularity-based replication and proactive caching reduce latency for

frequently accessed assets, while lightweight rendering operations are offloaded to programmable switches to decrease round-trip delays. Extensive simulations against multiple baselines demonstrate that the proposed approach consistently maintains end-to-end latency below 20 ms and improves resource utilization efficiency under dynamic workloads. These results highlight the potential of combining In-Network Computing and DRL-driven orchestration to satisfy the stringent Quality of Service (QoS) and Quality of Experience (QoE) requirements of next-generation immersive applications.

10:55 « CCOR: A DRL-Based Framework for Efficient Data Replication in Computing Continuum Architectures », Walid Abdallaoui, work presented at IEEE NOMS 2026 conference

Abstract: Smart cities generate massive amounts of heterogeneous data to support critical urban services such as transportation, healthcare, and energy. Meeting the strict Service Level Objectives (SLOs) of these services requires efficient data management across the Computing Continuum. Replication, beyond its role in fault tolerance, plays a crucial role in reducing data access latency through locality-aware placement. However, deciding where to place replicas across the Computing Continuum layers requires balancing conflicting objectives, including latency, cost, energy consumption, and availability. In this paper, we present CCOR (Coordinated Continuum Optimized Replication), a distributed framework for adaptive and multi-objective data replication management using Deep Reinforcement Learning (DRL). Unlike prior approaches that fail to adapt to heterogeneous SLOs as well as dynamic infrastructures, CCOR learns placement policies that jointly optimize data availability, storage cost, and energy consumption while ensuring applications latency SLO compliance. Simulations based on the Bordeaux metropolitan area demonstrate that CCOR achieves near-optimal availability while using up to 70% fewer replicas, reducing energy and cost by 10% and 5%, respectively, compared to specialized baselines.

11:20 **Invited talk**, « Predicting Factors that Affect East Asian Students' Reading Proficiency in PISA », Dr. Amy Lim Hui Lan, Assistant Professor at MMU Malaysia (<https://mmuexpert.mmu.edu.my/amylim>), work published in International Journal on Informatics Visualization

Abstract: Teachers, schools, and parents contribute to equipping students with essential knowledge and skills during their education years. When students are approaching the end of their education, they are randomly selected to participate in Program for International Student Assessment (PISA) to assess their reading proficiency. Existing work on analyzing PISA achievement results concentrates solely on identifying factors related to

Parent or in combination with Student. Limited work has been proposed on how factors related to Teacher and School affect the students' reading proficiency in PISA. This study focuses on identifying the factors related to Teacher and/or School that affect East Asian students' reading proficiency in PISA. The PISA achievement results from East Asian students are chosen as the domain study because they are consistently the top performers in PISA in the past decade. Decision Tree (DT), Naïve Bayes (NB), K-Nearest Neighbors (KNN) and Random Forest (RF) are compared. Hamming score is used as the evaluation metric. The results indicate that RF produces the best predictive models with highest Hamming score of 0.8427. Based on the findings, School-related factors such as the number of school's disciplinary cases, size of the school, the availability of computers with Internet facilities, the quality and educational qualifications of teachers have higher impact on the PISA achievement results. The identified factors can be used as a reference in assessing the current school's teaching, learning environment, and organizing extra activities as part of intervention programs to cultivate reading habits and enhance reading abilities among students.

11:50 **Invited talk**, « Empowering the Student Journey: From Programme Recommendation to Continuous AI Monitoring », Dr. Ting Choo Yee, Professor at MMU Malaysia (<https://mmuexpert.mmu.edu.my/cyting>)

Abstract: This talk presents an end-to-end AI framework supporting students at every stage of their academic journey at Multimedia University, Cyberjaya. The framework integrates two interlinked systems: SmartAdvisor, a hybrid recommendation framework combining Vision Language Models, Natural Language Processing, and Large Language Models to match prospective students to suitable programmes — achieving >95% document extraction accuracy with Qwen3.5-122B and leveraging GPT-OSS-20B for programme matching; and a continuous monitoring system tracking for >4000 students across eleven trimesters using machine learning to predict graduate-on-time outcomes and post-graduation employability. The monitoring system achieves >90% graduation prediction accuracy by the final trimester using mBERT and LGBM, with BorutaShap consistently identifying the most predictive academic, demographic, and geospatial variables. Together, these systems demonstrate how continuous AI monitoring can transform institutional decision-making and proactively empower student success.

12:20 Closing