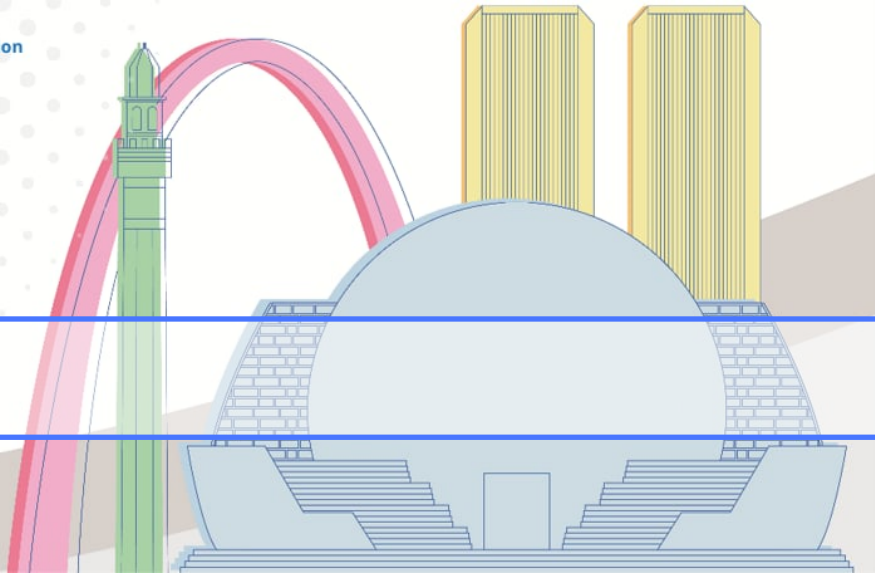

Schedule

Day 1, September 23, 2025 (Research Experience Day)

"(V)" denotes virtual participation

08:00 — 08:30	Registration
08:30 — 9:00	Opening and group photo
09:00 — 10:00	• **Jian-Qiao Sun, UC Merced, USA** What machine learning can do for engineering
10:00 — 11:30	• Panel discussion: Strategic alliance between graduate programs and industry. **Participants: Luis Ledezma (ITJ), Guillermo Sanchez (ThermoFisher Scientific), Leonardo Trujillo (TecNM/ITT)**
11:30 — 11:50	Break
11:50 — 12:50	• **Víctor Díaz Ramírez, CITEDI-IPN, Mexico** Hybrid methods in multichannel vision, image processing, and pattern recognition.
12:50 — 13:50	Finding your graduate program **(ITT, IPN, CETYS)** Dr. Ricardo Martínez Soto, Cetys Universidad, Coordinador de Maestría en Ingeniería e Innovacion. Dr. Ricardo Cardenas, TecNM/ITT, Coordinador de Posgrado en Ciencias de la Ingeniería. M.A.E. Anaid Berenice Álvarez Fuentes, Citedi, Coordinadora de Maestría en Ciencias en Sistemas Digitales.
13:50 — 14:20	Closing
14:20 — 16:00	Break
16:00 — 17:30	• Workshop 01: Opening the Black Box — Neural Networks. **Oliver Cuate, ESFM-IPN** • Workshop 02: Intensive Course — Deploying Large Language Models in Colab. **Adrian Rodriguez Aguiñaga, UABC** • Workshop 03: Interactive Workshop — Data Visualization with Python. **Noelia Torres and Rogelio Valdez, TecNM/ITT**

Day 2, September 24, 2025

08:00 — 09:00 Registration
09:00 — 09:30 Opening
09:30 — 11:00 Session I (GPHS1, 4 talks, Room 1) and Session II (AML1, 4 talks, Main Room)

Session I: Chair: Leonardo Trujillo

- Quantifying the impact of genetic programming feature transformations: an analysis using the optimal transport dataset distance.
  Joel Nation
- Integrating MLIR Infrastructure with MOEAs for FPGA Design Space Exploration.
  Joel Quevedo
- Hardware description language based approach for GSGP design.
  Juan Flores-R
- GSGP-CUDA for Supervised Classification.
  Cesar Lepe García

Session II: Chair: Daniel Hernández

- Embedded System for Vehicle Environment Perception and License Plate Recognition (LPR) Using Computer Vision and Deep Learning.
  Rogelio Leonardo Méndez Macías
- Underwater Computer Vision for Tilapia Aquaculture: YOLACT-Based Trajectory Tracking and Group Behavior Analysis During Feeding.
  Osbaldo Aragón-Banderas
- Optimizing Employee Attrition Prediction Models with TPOT AutoML.
  Daniel E Moreno
- Comparative Analysis of Machine Learning Models for Congestive Heart Failure Detection from QRS Complex.
  Adriel Lozada Romero

11:00 — 11:20 Coffee break
11:20 — 12:20 Keynote I: **Ryan J. Urbanowicz, Cedars-Sinai Medical Center, USA**
Learning to Evolve, Evolving to Learn: Interpretable AI for Unlocking Biomedical Complexity.
12:20 — 12:40 Group Photo
12:40 — 14:00 Poster session
13:00 — 14:00 Lunch Boxes (Lunch boxes will be provided)
14:00 — 15:00 Session III (EMO1, 3 talks, Main Room) and Session IV (OOG1, 3 talks, Room 1)

Session III: Chair: Oliver Schütze

- Multi-objetive Particle Swarm Algorithm for Multi-objective Reinforcement Learning.
  Teresa Becerril (V)
- A Continuation Method for Parameter Dependent Multi-objective Optimization Problems.
  Francisco Vidal
- Course Scheduling Optimization Using Genetic Algorithms: A Case Study in a Mathematics Department.
  Leonardo E. Rivera-Zacarias

Session IV: Chair: Rolando Menchaca-Méndez

- A Comparison of Heuristic Methods for the Identification of Regions of Interest in Wildfires.
  Braulio Leonardo Santa Fe-García (V)
- Socio-Environmental Regionalization Based on Clustering and Geospatial Analysis.
  Erick Estrada Patiño(V)
- Computing Regulatory Control Policies in Facility Location Games Using Reinforcement Learning.
  Rolando Menchaca-Méndez

15:00 — 15:20 Coffee break

15:20 — 17:20 Session V (DO1, 3 talks, Room 1), Session VII (LSEO1, 3 talks, Room 1) and Tutorial (Main Room)

Session V: Chair: Guadalupe Carmona Arroyo

- Optimal Hyperspectral Band Selection Using Metaheuristics for the Detection of Aspergillus flavus in Figs with Convolutional Neural Networks.
  Israel Calderon Aguilar (V)
- A Belief Model for BDI Agents Derived from Roles and Personality Traits.
  Eduardo David Martínez-Hernández (V)
- Knowledge-Based Design Methodology for Human Resources Information Management.
  Sofia Morales Zaleta(V)

Session VII: Chair: Guadalupe Carmona Arroyo

- Study of Performance from Hierarchical Decision Modeling in IVAs within a Greedy Context.
  Francisco Federico Meza Barrón (V)
- Study on the impact of machine learning techniques to support CO2 capture process via Ionic liquids.
  Rodolfo Ortega (V)
- A methodology for Information Retrieval from Industrial Systems based on Artificial Intelligence Methods.
  Jesús Carballo Ruelas (V)

Tutorial:

- Evolutionary Artificial Intelligence: An Industrial Case Study.
  Dr. Octavio Ramos-Figueroa and Marcela Quiroz-Castellanos

Day 3, September 25, 2025

09:00 — 09:30 Registration

09:30 — 11:00 Session VIII (GPHS2, 4 talks, Main Room) and Session IX (EMO2, 4 talks, Room 1)

Session VIII: Chair: Yazmín Maldonado

- Estimation of total body fat using Genetic Programming.
  José Manuel Muñoz Contreras
- Machine Learning Algorithms for Translating Inductive Band Signals into Spirometric Volume Estimates.
  José Rosario Ortega Ramírez
- Implementation of a CNN in FPGA for Pulmonary Volume Estimation.
  Fidel Alejandro Ortega Ramírez
- Exploration of FPGAs as a Platform for the Development of Adaptive Logic Circuit Design Using ANN.
  Teodoro Alvarez-Sanchez

Session IX: Chair: Oliver Cuate

- Scenario Optimization in Fuzzy Cognitive Maps by Means of Multi-objective Evolutionary Algorithms.
  Carlos Ignacio Hernández Castellanos
- RSG, a Method for Pareto Front Approximation and Reference Set Generation.
  Angel Rodriguez-Fernandez
- An Evolutionary Approach for the Computation of ε-Locally Optimal Solutions for Multi-Objective Multimodal Optimization.
  Carlos Ignacio Hernández Castellanos
- Smooth Path Planning for Multi-robot Systems in Warehouses.
  America Morales-Díaz

11:00 — 11:20 Coffee break

11:20 — 12:20 Keynote 2: **Pierrick Legrand, Bordeaux INP and IMS, France**
Artificial Evolution and Illustrative Applications

12:20 — 12:40 Coffee break

12:40 — 13:20 Session X (AML2, 2 talks, Room 1) and Session XI (LSEO2, 2 talks, Main Room)

Session X: Chair: Daniel Hernández

- Analysis of Mexican pandemic COVID-19 mobility data through an NP-hard propagation model.
  José Alejandro Cornejo-Acosta (V)
- Neural Architecture Search with CMA-ES for Facial Emotion Recognition.
  Ricardo Santiago (V)

Session XI: Chair: Marcela Quiroz

- Comparative Analysis of Optimization Techniques Applied to Automotive Assembly Using Big Data.
  Jose Peinado
- Experimental Data-Driven Gaussian Process Regression Model for Thermal Conductivity Prediction in Aluminum Alloys.
  Jaime Guillen

13:20 — 15:00	Lunch (on your own)
15:00 — 15:20	Coffee break
15:20 — 17:20	WNEO Chair: Yazmín Maldonado
19:00 — 23:00	Gala dinner - Food is served at 20:00

Day 4, September 26, 2025

09:00 — 10:00 Session XII (OOG2, 3 talks, Main Room) and Session XIII (EMO3, 3 talks, Room 1)

Session XII: Chair: Rolando Menchaca-Méndez

- Graph-Based Strategies for Grouping Variables in Multiobjective Optimization With Overlap.
  Miguel Angel Hernández Servin
- Fitting and validation of a Monod–logistic model for Stigeoclonium nanum in a thin-layer photobioreactor.
  Jesus Leonel Arce Valdez
- The Moving Firefighter Problem with Heterogeneous Propagation Times.
  Rolando Menchaca-Méndez

Session XIII: Chair: Oliver Cuate

- Bailando++: An Approximation from Computational Creativity.
  Fernando Rodrigo Valenzuela
- The Pareto Tracer for the Numerical Treatment of High-dimensional Multi-objective Optimization Problems.
  Pablo Uriel Benítez Ramírez
- Optimizing Solar Panel Allocation in Smart-City Buildings Using Genetic Algorithms.
  Ponciano Escamilla-Ambrosio

10:00 — 11:00 Session XIV (DO2, 3 talks, Main Room) and Session XV (LSEO3, 3 talks, Room 1)

Session XIV: Chair: Marcela Quiroz

- Analysis of Tumor Growth Under Oncological Treatment Using Mathematical Modeling and Artificial Intelligence.
  Uriel Solís Procopio
- Toward a Data Science Pipeline for the Design of Hyper-Heuristic Grouping Genetic Algorithms.
  Octavio Ramos-Figueroa
- Task Scheduling Optimization in Cloud Computing: A Bin Packing and Machine Learning Perspective.
  Jessica Gonzalez San Martin(V)

Session XV: Chair: Guadalupe Carmona Arroyo

- Dynamic Multi-objective Evolutionary Algorithm Based on Decomposition with Adaptive Response Change Environment Method (DMOEA/D-ARCEM).
  Miguel Garcia(V)
- A Hybrid Ensemble Model for Financial Time Series Forecasting Integrating Statistical, Machine Learning and Deep Learning Methods.
  José Olvera (V)
- Efficient Selection of Low Level Heuristics in Hyperheuristics Using Combinatorial Testing for the Master Bay Planning Problem.
  Norberto Castillo-García (V)

11:00 — 11:20 Coffee break

11:20 — 12:40 Session XVI (AML3, 4 talks, Main Room) and Session XVII (DO3, 4 talks, Room 1)

Session XVI: Chair: Paul Valle

- A Machine Learning Approach to Gender Classification via Operating System GUI Interaction Pattern.
  Eduardo Navarro Bautista (V)
- Preprocessing of EEG signals to measure the impact of psychological interventions through Artificial Intelligence.
  David Octavio Roa-Rico
- Evolutionary NAS Models and Pre-Trained CNNs for Tattoo and Face Recognition.
  Benjamin Fajardo Hernandez
- Beyond Hyperscalers: How MLOps Unlocks AI in Latin America.
  Adrian Rodriguez Aguiñaga

Session XVII: Chair: Octavio Ramos-Figueroa

- EV-STSP on Directed Urban Networks: Construction, Energy Enrichment, and Evaluation.
  Juan Hernandez-Marin(V)
- SA and TA algorithms applied to alternative assets in mexican stock exchange.
  José Purata Aldaz(V)
- Ensemble Deep Learning and Metaheuristic Strategies for Stock Forecasting and Investment Portfolio Optimization.
  José Purata Aldaz (V)
- Query Optimization in RAG: Retrieval and Context Construction.
  Fabricio Chia (V)

12:40 — 13:00 Closing

Poster session, September 24, 2025

- Predictive glucose monitoring and telemedicine-enhanced diabetes management.
  Jose Ricardo Cardenas Valdez
- Statistical and Machine-Learning Framework for Climate–Socioeconomic Interactions in Mexico and Developed and Emerging Economies.
  Guadalupe Valdez
- Design and Development of an Optimized Control System for a Solar Tracking System.
  Andres Calvillo-Tellez
- Fuzzy Decision Trees and Genetic Algorithms for the Automated Construction of Fuzzy Predicates.
  Jose Padron Tristan
- Particle Swarm Optimization for Hydro-Thermal Power Scheduling Problem with a Type-1 Fuzzy Controller for Dynamic Parameter Adjustment.
  Norberto Castillo-García