



Schedule NEO 2022

Each session ends with a **Session Wrap Up**. Times are 20 minutes per talk, as well as for the wrap ups. All times are in accordance with CDMX time zone. All the events will be held in room 1 except for the parallel sections, see below.

Day 1, November 08, 2022 Research Experience Day

- 9:15 – 9:30 Welcome to the RED
- 9:30 – 10:30 Panel de Aniversario de NEO, "Jóvenes investigadores comparten su experiencia en NEO".
MIA Guadalupe Carmona Arroyo, Dr. Carlos Ignacio Hernández Castellanos, Dr. Enrique Naredo García
- 10:30 – 11:00 Conferencia: Un vistazo a optimización multi-objetivo y algoritmos evolutivos
Dr. Carlos Ignacio Hernández Castellanos, IIMAS-UNAM, México
- 11:00 – 11:30 Conferencia: Optimización Inteligente para la Inteligencia Artificial
MIA Guadalupe Carmona Arroyo, Universidad Veracruzana, México
- 11:30 – 12:00 Conferencia: Diseño Automático de Circuitos Digitales
Dr. Enrique Naredo García, Universidad de Limerick, Irlanda
- 12:00 – 12:10 Coffee break
- 12:10 – 13:10 Oportunidades de posgrados
CINVESTAV-IPN, UV, TEcNM/ITT, TecNM/ITCM
- 13:10 – 13:25 Closing
- 16:00 – 18:00 **Women at NEO**

Day 2, November 09, 2022

- 09:00 – 09:20 Opening
- 09:20 – 10:30 Keynote I: **Michael Emmerich** (Room 1)
From Darwin to Newton: Evolutionary and Numerical Methods for Indicator-based Pareto Front Approximation
- 10:30 – 10:40 Coffee break
- 10:40 – 12:20 Sessions I and II (2 in parallel, up to 4 talks each)
- 12:20 – 12:30 Coffee break
- 12:30 – 14:10 Sessions III and IV (2 in parallel, up to 4 talks each)
- 14:10 – 15:00 Lunch break

15:00 – 16:10 Keynote II: **Lee Spector** (Room 1)

Honor all the things: A lexicase selection manifesto

16:20 – 16:30 Coffee break

16:30 – 17:45 Sessions V and VI (2 in parallel, 3 talks each)

17:45 – 17:55 Coffee break

17:55 – 19:10 Sessions VII and VIII (2 in parallel, 3 talks each)

Session I: 10:40 – 12:20, Room 1, **Decision Making & Intelligent Agents 1**

Chair: Claudia Gpe. Gómez Santillán

(ID 0507) **Manuel Vargas-Martinez, Nelson Rangel Valdez and Eduardo Fernández** Performance Analysis of Multi-Objective Simulated Annealing Based on Decomposition

(ID 3803) **Pablo Hernández-Vicente, Claudia Gpe. Gómez Santillán, Nelson Rangel Valdez and Fausto Balderas-Jaramillo** Multi-objective optimization through an interactive evolutionary framework with uncertainty

(ID 2321) **Lorena Rosas-Solórzano, Claudia Gpe. Gómez Santillán, Laura Cruz Reyes and Nelson Rangel Valdez** Coevolutionary algorithm applying outranking method with uncertainty for multi-objective optimization

(ID 8988) **José Alfredo Brambila Hernández, Eduardo Villegas-Huerta, Héctor Fraire, Miguel Ángel García-Morales and Armando Becerra de Angel** Hybrid Harmonic Search Algorithm with Improved Opposition-Based Learning (HHS-IOBL) in Benchmark Functions

Session II: 10:40 – 12:20, Room 2, **COVID & Healthcare 1**

Chair: Nelson Rangel Valdez

(ID 0649) **Santiago Sinisterra-Sierra, Salvador Godoy-Calderón and Miriam Pescador-Rojas** COVID-19 data analysis with a Multi-objective Evolutionary Algorithm for Causal Association Rules Mining

(ID 1837) **Christian Lizbeth Noguez-Moreno, Edwin Montes-Orozco, Ángel David Tellez-Macías, Gilberto Sinuhé Torres-Cockrell, Roman Anselmo Mora-Gutierrez and Miguel Ángel Fernández Romero** Relationship between the development of COVID-19 and poverty in the municipalities of Mexico

(ID 6488) **Roberto Herrera-Charles, Teodoro Alvarez-Sanchez and Jesús A. Alvarez-Cedillo** Binaural and multi tone generator to characterize nonlinear systems for health-care and device manufacturing applications

(ID 7935) **Oswaldo Sánchez Andrade, Roman A. Mora-Gutiérrez, Edwin Montes-Orozco, Sergio G. de los Cobos Silva, Eric A. Rincón-García, Pedro Lara-Velázquez, Miguel A. Gutiérrez Andrade and Jorge Juárez Gómez** A comparison of the behavior of the traditional education system and the remote teaching emerging project implemented by Autonomous Metropolitan University into the emergence of COVID-19

Session III: 12:30 – 14:10, Room 1, **Discrete Optimization 1**

Chair: Marcela Quiroz

(ID 1354) **José Fernando Padrón-Tristán, Laura Cruz Reyes, Rafael Espin-Andrade and Carlos Eric Llorente-Peralta** A genetic algorithm for predicate discovery with compensating fuzzy logic

(ID 2158) **Jordan Michelt Aran Perez, Laura Cruz Reyes, Bernabé Dorronsoro, Héctor Fraire, Nelson Rangel Valdez, Claudia Gpe. Gómez Santillán and Marcela Quiroz Castellanos** A cooperative coevolutionary genetic approach to solve packing problems

(ID 2189) **Jessica González-San-Martín, Laura Cruz Reyes, Héctor Fraire and Bernabé Dorronsoro** Study of Methods for One-dimensional Bin Packing Problem

(ID 3416) **Stephanie Amador Larrea, Marcela Quiroz Castellanos and Guillermo-de-Jesús Hoyos Rivera** A new high performance crossover operator for the Grouping Genetic Algorithm with Controlled Gene Transsmision

Session IV: 12:30 – 14:10, Room 2, **Genetic Programming & Machine Learning 1**

Chair: Daniel Hernández

(ID 0340) **Erick Estrada Patiño, Juan Frausto-Solis and Guadalupe Castilla-Valdez** Hurricanes occurrences and temperature forecasting by machine learning methods

(ID 1356) **Luis Muñoz Delgado and Adrian Rodriguez Aguiñaga** M3GP data refining under different scopes

(ID 1952) **José-Clemente Hernández-Hernández, Gustavo-Adolfo Vargas-Hakim, David Herrera-Sánchez and Efrén Mezura-Montes** Feature Selection with Single Objective Particle Swarm Optimization in Gene Expression Data

(ID 3500) **Jose M. Muñoz, Leonardo Trujillo and Daniel E. Hernández** Benchmarking GSGP-CUDA in SRBench

Session V: 16:20 – 17:45, Room 1, **Optimization in Industry 1**

Chair: Oliver Cuate

(ID 0624) **Yeudiel Lara Moreno and Carlos Ignacio Hernández Castellanos A** Hierarchical Approach to a Tri-objective Portfolio Optimization Problem Considering an ESG Index

(ID 0753) **Julieta Ramiro Estrada, Sebastián Sandoval Montiel, Oliver Cuate and Lourdes Uribe** A multiobjective approach for personalized inversion

(ID 5925) **Ricardo Pérez-Rodríguez and Sergio Frausto-Hernández** A radial hybrid estimation of distribution algorithm for the truck and trailer routing problem

Session VI: 16:20 – 17:45, Room 2, **NEO 1**

Chair: Oliver Schütze

(ID 4902) **Angel Eduardo Rodríguez-Fernández** Solving Discrete Problems with Continuous Optimization

(ID 1150) **Raymundo Juárez del Toro, Vadim Azhmyakov, Carmen Borrego Salcido and Alejandro S. Fonseca Zendejas** A Generalized Linear Model estimation for agricultural variables by an extension of the so-called Recursive Least Square Method

(ID 2276) **Oliver Cuate and Oliver Schütze** A Continuation Method for the Treatment of Degenerated Multi-objective Optimization Problems

Session VII: 17:55 – 19:10, Room 1, **Genetic Programming & Machine Learning 2**

Chair: Leonardo Trujillo

(ID 3632) **Maritza Talhia Bernabé-Morales, Erasmo Cadenas-Calderón, Rafael Campos-Amezcuca and Itzaguero Garcia-Rodriguez** Combination of WRF numerical model and ARIMA model to improve wind speed forecasts

(ID 3724) **Jose Luis Purata-Aldaz, Juan Frausto-Solis, Juan Javier González-Barbosa and Guadalupe Castilla-Valdez** Enhanced combinatorial forecasting for Mexican Stock Exchange

Session VIII: 17:55 – 19:10, Room 2, **NEO 2**

Chair: Oliver Schütze

(ID 3071) **Luis Ángel Meza-Zárata, Roman Anselmo Mora-Gutiérrez, Edwin Montes-Orozco, Juan Villegas-Cortez, Jorge Mercado-Mondragon, Jorge Juárez-Gómez and Bibiana Obregón Quintana** A bibliometric analysis of texts on homophobia, transphobia, HIV discrimination, and gender violence from 2012 to 2022

(ID 4027) **Victor Manuel Sanchez Sanchez, Carlos Gershenson Garcia and Carlos Ignacio Hernández Castellanos** On the Effect of Temporal Heterogeneity on Selection Pressure of Evolutionary Algorithms

(ID 8118) **Carlos Hernández and Oliver Schütze** A Bounded Archiver for Hausdorff Approximations of the Pareto Front for Multi-Objective Evolutionary Algorithms

Day 3, November 10, 2022

09:00 – 10:10 Keynote III: **Laura Cruz-Reyes** (Room 1)

Where is research going in multi-objective evolutionary optimization incorporating user preferences?

10:10 – 10:20 Coffee break

10:20 – 12:00 Sessions IX and X (2 in parallel, 4 talks each)

12:00 – 12:10 Coffee break

12:10 – 13:50 Sessions XI and XII (2 in parallel, 4 talks each)

13:50 – 15:00 Lunch break

15:00 – 16:10 Keynote IV: **Una-May O’Reilly** (Room 1)

Modeling Adversarial Dynamics

16:10 – 16:20 Coffee break

16:20 – 17:45 Sessions XIII and XIV (2 in parallel, 3 talks each)

17:45 – 18:00 Closing

Session IX: 10:20 – 12:00, Room 1, **Discrete Optimization 2**

Chair: Marcela Quiroz

(ID 3779) **Sara Mandujano, Adriana Lara and Juan Carlos Ku-Cauich** On the Study of Some Design Aspects for Evolutionary Algorithms for the Generation of Boolean Functions

(ID 4799) **Guadalupe Carmona-Arroyo, Marcela Quiroz Castellanos and Efrén Mezura-Montes** An experimental study of the Grouping Genetic Algorithm for Cooperative Co-evolution Variable Decomposition in Large-scale Optimization Problems

(ID 8447) **Norma-Angélica Zavaleta-García, Oscar Fernández-Solano, Marcela Quiroz-Castellanos, Hector-Gabriel Acosta-Mesa and Efrén Mezura-Montes** A Grouping Genetic Algorithm for RGB-image segmentation

(ID 8646) **Saul Neri-Ortiz, Miriam Pescador-Rojas and Salvador Godoy-Calderón** Learning explainable classification models by approximating the minimum clique parti-

tion problem

Session X: 10:20 – 12:00, Room 2, **Genetic Programming & Machine Learning 3**

Chair: Leonardo Trujillo

(ID 4737) **Youness El Hamzaoui, Juan Antonio Álvarez Arellano and Rodrigo Daniel Álvarez Bello Martínez** Machine learning techniques to predict the life testing of fixed offshore platform structure

(ID 4956) **Youness El Hamzaoui, Jose Luis Vazquez Avila, Juan Israel Yañez Vargas, Juan Antonio Alvarez Arellano and Carlos Roman De la Cruz Dorantes** Estimating Evapotranspiration of Mexican Tropical Climate using Machine Learning Algorithms

(ID 5890) **Edwin Bryan Salas López, Juan Villegas Cortez, Silvia Beatriz González Brambila, Francisco Fernandez de Vega, Graciela Roman Alonso and Salomón Cordero-Sánchez** Emotion face recognition utilizing evolutionary CNN

(ID 6562) **Arnoldo Díaz-Ramírez, Julia Diaz-Escobar, Verónica Quintero and Rosendo Moncada** Classification of falls events in the elderly using machine learning techniques

Session XI: 12:10 – 13:50, Room 1, **Decision Making & Intelligent Agents 2**

Chair: María Lucila Morales Rodríguez

(ID 0730) **Jorge Castro-Rivera, Nelson Rangel Valdez, María Lucila Morales-Rodríguez and Claudia Gpe Gómez-Santillán** Evaluation of Satisfaction, Personality, and Preferences Models applied in Project Portfolio Optimization

(ID 4025) **Monica Fabiola Briones Baez, Luciano Aguilera Vazquez and Nelson Rangel Valdez** MultiObjective Optimization of Microalgae Metabolism

(ID 4047) **José Ángel Villarreal-Hernández, María Lucila Morales-Rodríguez and Nelson Rangel Valdez** Towards chemical forecasts guided by negotiating software agents

(ID 3711) **Carlos Eric Llorente-Peralta, José Fernando Padrón-Tristán, Laura Cruz Reyes and Rafael Espin-Andrade** Knowledge discovery through an archimedean compensatory fuzzy logic neural network

Session XII: 12:10 – 13:50, Room 2, **Optimization in Industry 2**

Chair: Oliver Cuate

(ID 6444) **José Guadalupe Flores-Muñiz, Nancy Solis-García, Natalya Kalashnykova and Viacheslav Kalashnikov** Consistent Conjectural Variations Equilibrium for a Financial Model

(ID 8222) **Itzagueri García-Rodríguez, Erasmo Cadenas-Calderón, Jesús Pacheco-Ibarra, Rafael Campos-Amezcuca and Maritza Bernabé-Morales** The importance of WRF parameterization for wind ramp prediction

Session XIII: 16:20 – 17:45, Room 1, **COVID & Healthcare 2**

Chair: Nelson Rangel Valdez

(ID 8191) **Gerardo de Jesús Martínez Neri, Juan Frausto-Solis, Juan Javier González-Barbosa and Lucía J. Hernández-González** Intelligent Forecasting Methods for COVID-19, MLP-SVRES

(ID 9587) **Edwin Montes-Orozco, Roman Anselmo Mora-Gutiérrez, Christian**

Lizbeth Noguez-Moreno, Ángel David Téllez-Macías, Gilberto Sinuhé Torres-Cockrell and Miguel Ángel Fernández-Romero Identification of the spread of COVID-19 in Mexico, using temporal complex networks and optimization approaches

Session XIV: 16:20 – 17:45, Room 2, **Genetic Programming & Machine Learning 4**

Chair: Daniel Hernández

(ID 6902) **Luis A. Cardenas Florido, Leonardo Trujillo and Daniel E. Hernández** Benchmarking a CUDA-based implementation of genetic programming using SRBench

(ID 8906) **Lemuel Rodriguez Moya, Juan Frausto-Solis, Juan Javier González-Barbosa and Guadalupe Castilla-Valdez** Selection methods applied to FCTA* forecasting ensemble methodology

(ID 9759) **Cristian Sandoval, Leonardo Trujillo and Luis C. González** Improving genetic programming based approximations of the hypervolume indicator