

Xavier F. C. Sánchez Díaz

PHD CANDIDATE · COMPUTER SCIENTIST

Trondheim, Norway

saxarona.github.io | [saxarona](https://github.com/saxarona) | [saxarona](https://twitter.com/saxarona)

Education

Norwegian University of Science and Technology

Trondheim, Norway

PHD CANDIDATE IN ARTIFICIAL INTELLIGENCE

2021–Present

- Working under supervision of Prof. Ole Jakob Mengshoel on evolutionary computation for complex scenarios
- Working along the Norwegian Open AI Lab on EvoLP.jl: a framework for Evolutionary Computation in Julia [🔗](#)

Tecnológico de Monterrey

Monterrey, Mexico

MSC. IN INTELLIGENT SYSTEMS – 94/100, *cum laude*

Jan 2016–Dec 2017

- Worked under supervision of Prof. Hugo Terashima-Marín and Prof. José Carlos Ortiz-Bayliss on hyper-heuristics, algorithm selection and evolutionary computation for combinatorial optimisation.
- **Thesis:** ANALYSIS OF A FEATURE-INDEPENDENT HYPER-HEURISTIC MODEL FOR CONSTRAINT SATISFACTION AND BINARY KNAPSACK PROBLEMS

Universidad Autónoma de Nuevo León

Monterrey, Mexico

B.S. IN SOFTWARE ENGINEERING – 94.5/100, *summa cum laude*

Jan 2010–May 2015

- *Ing. Arturo Cárdenas Berrueto* Academic Merit Medal
- Worked under supervision of Dr. Sergio Alcaraz-Corona on the foundations of a recommender system for vocational orientation.
- Worked under supervision of Prof. Patricia Salinas Martínez (Tecnológico de Monterrey) on mathematics learning, visualisation and assessment using digital technologies.

Experience

ENGINEERING AND COMPUTER SCIENCE

Research Group with Strategic Focus on Intelligent Systems

Monterrey, Mexico

DATA SCIENTIST

Dec 2018–May 2020

- Developed and implemented multiple machine learning models for market segmentation, resource allocation, and sales prediction for a university-industry collaboration scheme. Most of the work is under NDA.

Center for Intelligent Systems, Tecnológico de Monterrey

Monterrey, Mexico

KNOWLEDGE ENGINEER

May 2017–Jul 2017

- Developed and implemented a knowledge representation framework for a conversational chatbot as an intelligent tutor for “Introduction to Mathematics” (MA-1001), using IBM Watson and dealing with knowledge abstraction and reasoning.

Department of Mathematics, Tecnológico de Monterrey

Monterrey, Mexico

LEAD DEVELOPER

Jun 2013–Dec 2015

- Developed and implemented online evaluations for various mathematics MOOCs at Coursera.
- Implemented a multiplayer, web-based board game, among many other projects focusing on mathematics education.
- Took part in the writing and translation of various academic papers presented at international conferences.

TEACHING

Department of Computer Science, Tecnológico de Monterrey

Monterrey, Mexico

LECTURER (FAGLÆRER)

Aug 2018–Jun 2021

- TC2020, TC2037 – Mathematical Foundations of Computing (Autumn ‘18, Autumn ‘20, Spring ‘21)
- TC1017 – Problem Solving with Programming (Spring ‘19, Autumn ‘19)
- TC2006, TC2037 – Programming Languages (Autumn ‘18–Autumn ‘19, Spring ‘21)
- TC1003/B – Discrete Mathematics & Introduction to Linear Algebra (Spring ‘20, Spring ‘21)
- CV1012 – Numerical Methods for Civil Engineering (Spring ‘20)
- TC1031 – Data Structures and Fundamental Algorithms (Autumn ‘20)

Department of Computer Science, Norwegian University of Science and Technology


Trondheim, Norway

LECTURER, TEACHING FELLOW AND GRADER

Aug 2022–PRESENT

- TDT4136 – Introduction to Artificial Intelligence (Autumn '22, Autumn '23) (vit. ass.)
- IT3708 – Bio-inspired Artificial Intelligence (Spring '23) (faglærer, sensor, vit. ass.)

Selected Publications

For a comprehensive list, please refer to my  Google Scholar.

Norwegian University of Science and Technology

Trondheim, Norway

DEPARTMENT OF COMPUTER SCIENCE

Oct 2021–PRESENT

- O. J. Mengshoel, F. Foss, and X. F. C. Sánchez-Díaz, 'Controlling Hybrid Evolutionary Algorithms in Subset Selection for Multimodal Optimization', in Proceedings of the Companion Conference on Genetic and Evolutionary Computation, in GECCO '23 Companion. New York, NY, USA: Association for Computing Machinery, Jul. 2023, pp. 507–510. doi: 10.1145/3583133.3590545
- M. E. Schjølberg, N. P. Bekkevold, X. F. C. Sánchez-Díaz, and O. J. Mengshoel, 'Comparing Metaheuristic Optimization Algorithms for Ambulance Allocation: An Experimental Simulation Study', in Proceedings of the Genetic and Evolutionary Computation Conference, in GECCO '23. New York, NY, USA: Association for Computing Machinery, Jul. 2023, pp. 1454–1463. doi: 10.1145/3583131.3590345
- X. F. C. Sánchez-Díaz and O. J. Mengshoel, 'EvoLP.jl: A playground for Evolutionary Computation in Julia', in Proceedings of the 5th Symposium of the Norwegian AI Society, in NAIS, vol. 3431. Bergen, Norway: CEUR Workshop Proceedings, 2023. [Online]. Available: <https://ceur-ws.org/Vol-3431/paper7.pdf>

Tecnológico de Monterrey

Monterrey, Mexico

RESEARCH GROUP WITH STRATEGIC FOCUS ON INTELLIGENT SYSTEMS

Jan 2016–Oct 2021

- X. Sánchez-Díaz, J. C. Ortiz-Bayliss, I. Amaya, J. M. Cruz-Duarte, S. E. Conant-Pablos and H. Terashima-Marin. "A Feature-independent Hyper-heuristic Approach for Solving the Knapsack Problem", Applied Sciences. 2021, 11, 10209. doi: 10.3390/app112110209.
- E. Lara-Cárdenas, X. Sánchez-Díaz, I. Amaya, J. M. Cruz-Duarte and J.C. Ortiz-Bayliss. "A Genetic Programming Framework for Heuristic Generation for the Job-shop Scheduling Problem", Advances in Soft Computing. MICAI 2020. Lecture Notes in Computer Science, vol 12468. Springer, Cham. doi: 10.1007/978-3-030-60884-2_21
- X. Sánchez-Díaz, J. C. Ortiz-Bayliss, I. Amaya, J. M. Cruz-Duarte, S. E. Conant-Pablos and H. Terashima-Marin. "A Preliminary Study on Feature-independent Hyper-heuristics for the 0/1 Knapsack Problem", 2020 IEEE Congress on Evolutionary Computation (CEC), Glasgow, United Kingdom, 2020, pp. 1–8, doi: 10.1109/CEC48606.2020.9185671.

Tecnológico de Monterrey

Monterrey, Mexico

DEPARTMENT OF MATHEMATICS

Aug 2013–Dec 2015

- P. Salinas, E. Quintero and X. Sánchez-Díaz. "Math and Motion: a Coursera MOOC to rethink math assessment", in Learning and Collaboration Technologies. *Lecture Notes in Computer Science* (9192), 313–324. Springer. Presented at the 17th International Conference on Human-Computer Interaction, Los Angeles, CA, United States.

Skills & Coursework

- Evolutionary Computation and Optimisation
- Computational and Artificial Intelligence
- Data Science and Machine Learning
- Computability and Algorithm Design
- Software Engineering
- Avid user of $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$, Julia and Git
- Familiar with the scientific Python stack
- Microsoft and GNU/Linux-based systems
- Moderate knowledge of C++, Bash and HPC platforms
- IELTS Academic (CEFR C1)
- Intermediate Norwegian (bokmål) (Completed 3 levels of Norwegian for foreigners ~B1)

Volunteering

IEEE Symposium Series on Computational Intelligence 2025

Trondheim, Norway

LOCAL CHAIR

May 2023–PRESENT

- Working with Prof. Pauline Haddow (NTNU) on the organisation of the IEEE SSCI 2025 conference.

IEEE Computational Intelligence Society

Online

STRATEGIC PLANNING COMMITTEE TECHNICAL SUPPORT MEMBER

Sep 2022–PRESENT

- Working with Prof. Pauline Haddow (NTNU) as technical support member for the Conference Organisation Tool of the IEEE CIS