Xavier F. C. **Sánchez Díaz**

RESEARCH ASSOCIATE · COMPUTER SCIENTIST

Monterrey, Mexico

☐ (+52) 96-1208-6268 | ✉ xavier.sanchezdz@gmail.com | 🏠 saxarona.gitlab.io/ | git saxarona

Education

Universidad Autónoma de Nuevo León
Monterrey, Mexico

B.S. IN SOFTWARE ENGINEERING
Jan 2010–May 2015

- Got a school-wide scholarship, given to undergraduate students with outstanding grades (FIME)
- Got a university-wide scholarship, given to the top three students per programme (UANL)
- 94.5/100, *summa cum laude*

Tecnológico de Monterrey
Monterrey, Mexico

MSc. IN INTELLIGENT SYSTEMS
Jan 2016–Dec 2017

- Got a university-wide scholarship, given to graduate students with outstanding grades (ITESM)
- Got a national grant for graduate students with outstanding grades (CONACyT)
- 94/100, *cum laude*

Experience

ENGINEERING AND IT

Mathematics Department, 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.

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 directly with knowledge abstraction and reasoning.

TEACHING

Mathematics Department, Tecnológico de Monterrey
Monterrey, Mexico

ONLINE TEACHING ASSISTANT
Aug 2013–Dec 2015

- TA for "Matemáticas y Movimiento" (MA-1001) and "Cálculo Diferencial e Integral unidos por el Teorema Fundamental del Cálculo" (MA-1015) in Coursera.

Computer Science Department, Tecnológico de Monterrey
Monterrey, Mexico

ASSOCIATE LECTURER
Aug 2018–PRESENT

- TC2020 – Mathematical Foundations of Computing (Fall '18)
- TC1017 – Problem Solving with Programming (Spring '19)
- TC2006 – Programming Languages (Fall '18, Spring '19)

Research

UNDERGRADUATE

Universidad Autónoma de Nuevo León
Monterrey, Mexico

OrientaUANL
Jan 2015–May 2015

- Worked under supervision of Dr. Sergio Alcaraz-Corona on the foundations of a recommender system for vocational orientation.

Tecnológico de Monterrey   *Monterrey, Mexico*
Mathematics Department: Research assistant   *Jan 2014–Dec 2015*

- Worked under supervision of Dr. Patricia Salinas Martínez on mathematics learning, visualization and assessment using digital technologies.

Graduate

Tecnológico de Monterrey   *Monterrey, Mexico*
Research Group with Strategic Focus on Intelligent Systems   *Jan 2016–Dec 2017*

- Worked under supervision of Dr. Hugo Terashima-Marín on hyper-heuristics, algorithm selection and combinatorial optimisation.
- **Thesis**: Analysis of a Feature-independent Hyper-heuristic Model for Constraint Satisfaction and Binary Knapsack Problems.
  — Proposed a hyper-heuristic model to tackle on combinatorial optimisation problems even when no problem information is available. The method can find suitable solvers from the combination of non-promising heuristics, and can be extended for other optimisation problems.

Selected Publications and Presentations

Tecnológico de Monterrey   *Monterrey, Mexico*
Mathematics Department   *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.
- P. Salinas, E. Quintero, X. Sánchez-Díaz and E. González-Mendívil. "Towards a Visual and Tangible Learning of Mathematics". *Communications in Computer and Information Science* (529), 307–312. Springer. Presented at the 17th International Conference on Human-Computer Interaction, Los Angeles, CA, United States.
- X. Sánchez-Díaz, A. González and P. Salinas. "Kinect-assisted Visualization of Functions of Two Real Variables in Mathematics", in *Procedia Computer Science* (75), 103–106. Elsevier B.V.. Presented at the 2015 International Conference on Virtual and Augmented Reality in Education, Monterrey, NL, Mexico.
- C. Hernández-Nieto, X. Sánchez-Díaz and P. Salinas. "A Mobile First Approach for the Development of a Sustainability Game", in *Procedia Computer Science* (75), 182–185. Elsevier B.V.. Presented at the 2015 International Conference on Virtual and Augmented Reality in Education, Monterrey, NL, Mexico.

Tecnológico de Monterrey   *Monterrey, Mexico*
Research Group with Strategic Focus on Intelligent Systems   *Jan 2016–Present*

- X. Sánchez-Díaz, G. Ayala-Bastidas, P. Fonseca-Ortiz and L. Garrido. "A Knowledge-based Methodology for Building a Conversational Chatbot as an Intelligent Tutor", *to appear in* Advances in Computational Intelligence. *Lecture Notes in Artificial Intelligence* (11289), 164–175. Springer. Presented at the 17th Mexican International Conference on Artificial Intelligence, 2018, Guadalajara, JC, Mexico.
- X. Sánchez-Díaz, J.C. Ortiz-Bayliss, I. Amaya and H. Terashima-Marín. "Analysis of non feature-dependent Hyper-heuristics in Combinatorics". Presented at the 2017 UTSA College of Sciences Research Conference. San Antonio, TX, United States.

Skills

Coursework

- Algorithm Design
- Soft Computing
- Data Science and Machine Learning
- Artificial Intelligence
- Software Engineering
- Web Development

Programming

- LaTeX, Python, Octave, Julia
- HTML5, JS, PHP
- C#, Mathematica

Honors & Awards

2015   ***Ing. Arturo Cárdenas Berrueto* Academic Merit Medal**, FIME, UANL   *Monterrey, Mexico*