

RUBÉN D. FONNEGRA

Medellín, Colombia

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EDUCATION

Ph.D. Ingeniería, Instituto Tecnológico Metropolitano (ITM) Nov 2025

Supervised by Prof. Gloria Díaz, Ph.D. (ITM); and prof. Juan C. Caicedo, Ph.D. (Univ Wisconsin-Madi)

M.Sc. Automatización y Control, Instituto Tecnológico Metropolitano (ITM) Sept 2018

Supervised by Prof. Gloria Díaz, Ph.D. (ITM); and prof. Juan C. Caicedo, Ph.D. (Broad Institute of MIT and Harvard)

Eng. Electrónico, Instituto Tecnológico Metropolitano (ITM) Sept 2015

Supervised by Prof. David Góez, M.Sc. (ITM)

RESEARCH INTERESTS

- Machine Learning & Deep Learning
- Biomedical Image Processing
- Computer Vision

SKILLS

Prog. Languages Python, C++, Shell, L^AT_EX

Frameworks Pytorch, TensorFlow, Matlab, Scikit-Learn, OpenCV, Scikit-Image

Tools Git, Colab, Kaggle, Docker, Studio Code, Linux

Soft Skills Accountability, Problem Solving, Teamwork, Time Management, Communication, Leadership

HONORS AND AWARDS

- Received scholarship from the national Bicentennial Doctoral Excellence Scholarship Program (programa de becas de excelencia doctoral), MinCiencias, Colombia; 2020
- Received *summa cum laude* distinction for the master's thesis entitled "Automatic Emotion Recognition From Multimodal Information Fusion Using Deep Learning Approaches", 2019.

SELECTED PUBLICATIONS

Self-calibrated pixel-attention autoencoder: A strategy for contrast-enhanced spectral mammography image-to-image translation; Osorno-Castillo, K., Fonnaegra, R. D., Hernández, M. L., Mera-Banguero, C., & Díaz, G. M. Digital Health, 12, 20552076261420932. 2026

Synthesizing late-stage contrast enhancement in breast MRI: A comprehensive pipeline leveraging temporal contrast enhancement dynamics; Fonnaegra, R. D., Hernández, M. L., Caicedo, J. C., & Díaz, G. M.. Computers in Biology and Medicine, 196, 110660. 2025

LA-Breast: A Latin American multiparametric breast DCE-MRI dataset with benign and malignant annotations; Fonnaegra, R. D., Mera, C., Díaz, G. M., & Hernández, L. Data in Brief, 57, 110995. 2024

Early-to-late prediction of dce-mri contrast-enhanced images in using generative adversarial networks. Fonnaegra, R. D., Hernandez, M. L., Caicedo, J. C., & Díaz, G. M. (2023, April). In 2023 IEEE 20th International Symposium on Biomedical Imaging (ISBI) (pp. 1-5). IEEE. 2023

Analysis of the Generation of a Synthetic Response to the Application of Contrast Agents in Breast Medical Images Using Generative Adversarial Networks; Jaider Stiven Rincón, Carlos Mera, Rubén D. Fonnaegra, Gloria M. Díaz, International Conference on Smart Technologies, Systems and Applications, 2022

Automatic Identification of COVID-19 in Chest X-Ray Images Based on Deep Features and Machine Learning Models; Rubén D Fonnegra, Fabián R Narváez, Gloria M Díaz, International Conference on Smart Technologies, Systems and Applications, 2022

Integration of Machine Learning Models in PACS Systems to Support Diagnostic in Radiology Services; Kevin Osorno-Castillo, Rubén D Fonnegra, Gloria M Díaz, Workshop on Engineering Applications, 2020

ACADEMIC AND RESEARCH EXPERIENCE

Director of the Big Data graduate program Institución Universitaria Pascual Bravo	Jan 2026 - Current
Director of the Ciencia de Datos Aplicados e Inteligencia Artificial (CIDIA) research group, Institución Universitaria Pascual Bravo	Jan 2024 - Current
Grupo de Investigación e Innovación Ambiental (GIIAM) Institución Universitaria Pascual Bravo	Aug 2018 - Dic 2023
Member of the Grupo de investigación en Automática, Electrónica y Ciencias Computacionales, Instituto Tecnológico Metropolitano	Jan 2014 - Dic 2018

WORK HISTORY

Professor (Computational intelligence, graduate school) Institución Universitaria Pascual Bravo	Aug 2018 - Current
Professor (Machine learning, undergrad school) Institución Universitaria Pascual Bravo	Aug 2018 - Current
Instructor (Programming) Instituto Tecnológico Metropolitano	Feb 2016 - Aug 2018
Lab Assistant, Instituto Tecnológico Metropolitano	Feb 2014 - Aug 2018