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Undergraduate Research Program

Project Name	A C++ implementation of an interpretable anomaly detection algorithm
Campus & Location in Mexico	Estado de México
Faculty	Engineering and Sciences
Research Area	Machine Learning
Research Responsible	Dr. Miguel Angel Medina
Description of the Project	The importance of understanding and explaining the associated classification results in the utilization of artificial intelligence (AI) in many different practical applications has contributed to the trend of moving away from black-box AI towards explainable AI (XAI). In this project, the student will implement in C++ the first interpretable autoencoder based on decision trees, which is designed to handle categorical data without the need to transform the data representation.
Training Provided	The student will learn about anomaly detection, decision trees, and performance evaluation of one-class classifiers.

Offered during:

SUMMER	X	WINTER		SEMESTER	

Student

Tasks/Responsibilities	1. Translate an anomaly detection algorithm from C# (https://github.com/miguelmedinaperez/DTAE) to C++. 2. Evaluate the algorithm in 30 categorical datasets.
Required Language Proficiency	Fluent in English
Required Skills and Abilities	Solid knowledge of C++ and Object-Oriented Programming.
Other Documents	1) Being at least in your 2nd year of bachelor 2) Accumulative grade point average (GPA) 2.5 3) Official Transcript 4) 2 letters of recommendation of faculty members 5) Resume 6) Letter of intention explaining the reason why you would like to participate in the research program