

# Herramienta computacional para el entrenamiento y validación de dispositivos electrónicos inteligentes como dispositivos de protección

**ADN-R**  
Active Distribution Network-Research



The screenshot displays the IED-LEARNING software interface with several overlapping windows. The main window shows the file path: `C:/Users/Duirist/Desktop/DUIRIS DRIVE/Proyecto Final - Pregrado/HERRAMIENTA COMPUTACIONAL/Base de Datos/dataset`. It includes buttons for **Choose Folder** and **Generate Folder**. The **Choose Relays to Train** section lists Relay-1, Relay-11, Relay-13, Relay-3, Relay-4, Relay-6, and Relay-7, with **All** and **None** selection buttons. The **Discrete Fourier Transform** section has a **Choose Attributes** list including Voltage Magnitude Ph. A, Voltage Angle Ph. A, Voltage Magnitude Ph. B, Voltage Angle Ph. B, Voltage Magnitude Ph. C, Voltage Angle Ph. C, Current Magnitude Ph. A, Current Angle Ph. A, Current Magnitude Ph. B, Current Angle Ph. B, Current Magnitude Ph. C, and Current Angle Ph. C, also with **All** and **None** buttons. The **Choose Calculation Mode** section offers Mode 1 and Mode 2, with a **Run** button. A **Microgrid Representation** diagram shows a network with Thermal Power Plant, Solar Power Plant, Wind Power Plant, and Hydroelectric Power Plant, connected to a central Grid Management hub. Other windows show a **Select Relay** list, a **Visual Distribution of Parameters** bar chart for Voltage Magnitude Ph. A, a **Select Machine Learning Technique** menu (Decision Tree, Support Vector Machines, Neural Networks), **Define Hyperparameters** (Criterion: gini, Max. Depth: None), and a **Decision Tree Visualization** showing a tree structure with nodes like `Current Magnitude Ph. A <= -0.702` and `Voltage Magnitude Ph. A <= 0.601`.

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