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(57) Abstract :
The abstract of the present invention delineates a cutting-edge system that integrates machine learning algorithms with a user-friendly graphical interface to optimize the design of concrete mixes. This inventive solution harnesses the power of a Multi-Layer Perceptron (MLP) model, trained on extensive datasets encompassing a wide array of concrete mix components and their resultant performance metrics. The system is engineered to predict the optimal proportions of concrete ingredients that achieve desired specifications, including compressive strength, workability, and durability, while also considering sustainability and cost-effectiveness. The graphical user interface, developed with Tkinter in Python, offers an intuitive platform for users to input their requirements, interact with the predictive model, and receive tailored concrete mix designs. This innovation stands as a pivotal advancement in the field of construction engineering, providing a robust tool for enhancing the quality, efficiency, and environmental footprint of concrete construction projects.

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