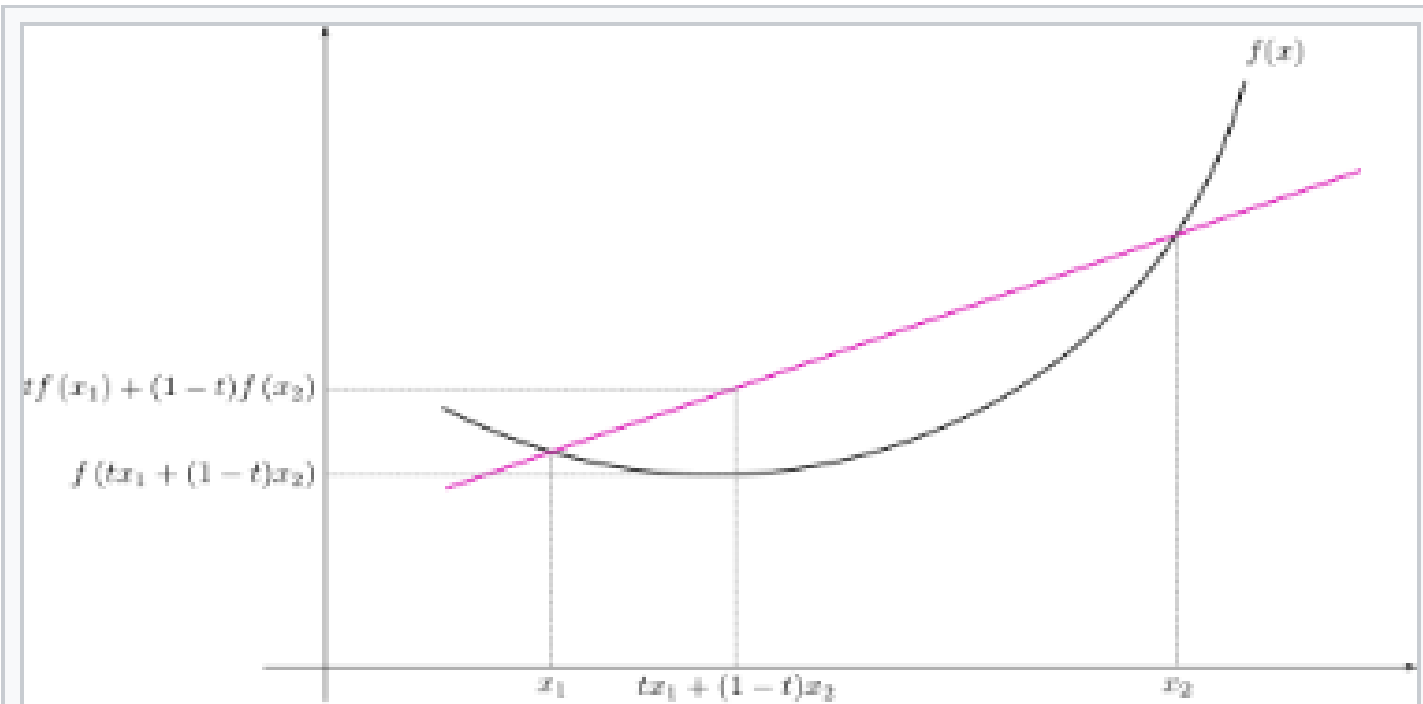


Electric Vehicles

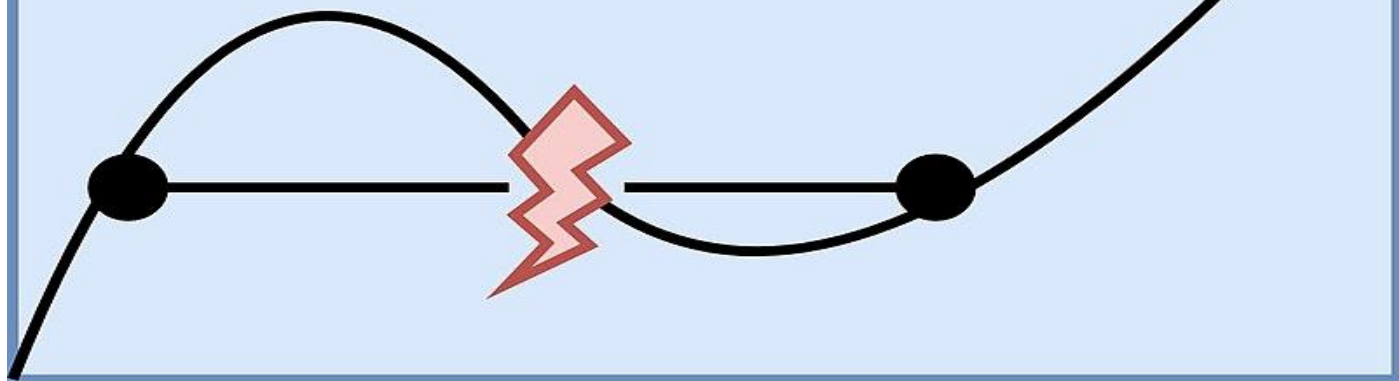
Pratyush Chakraborty



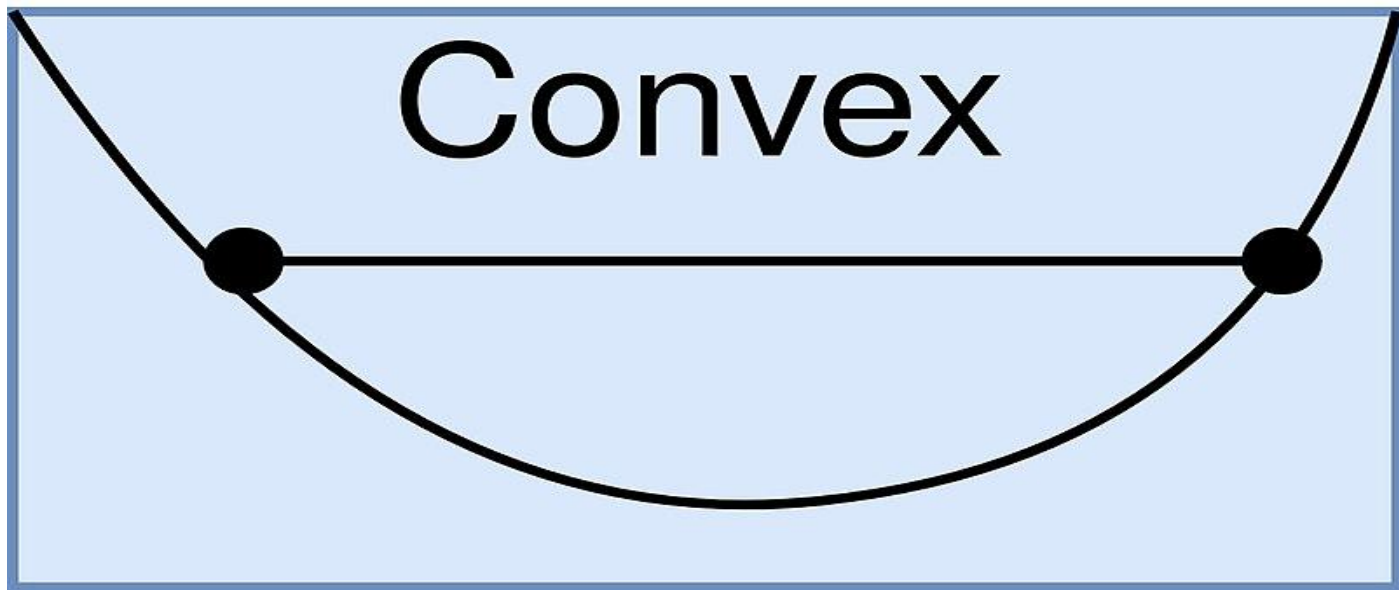
Convex function on an interval.

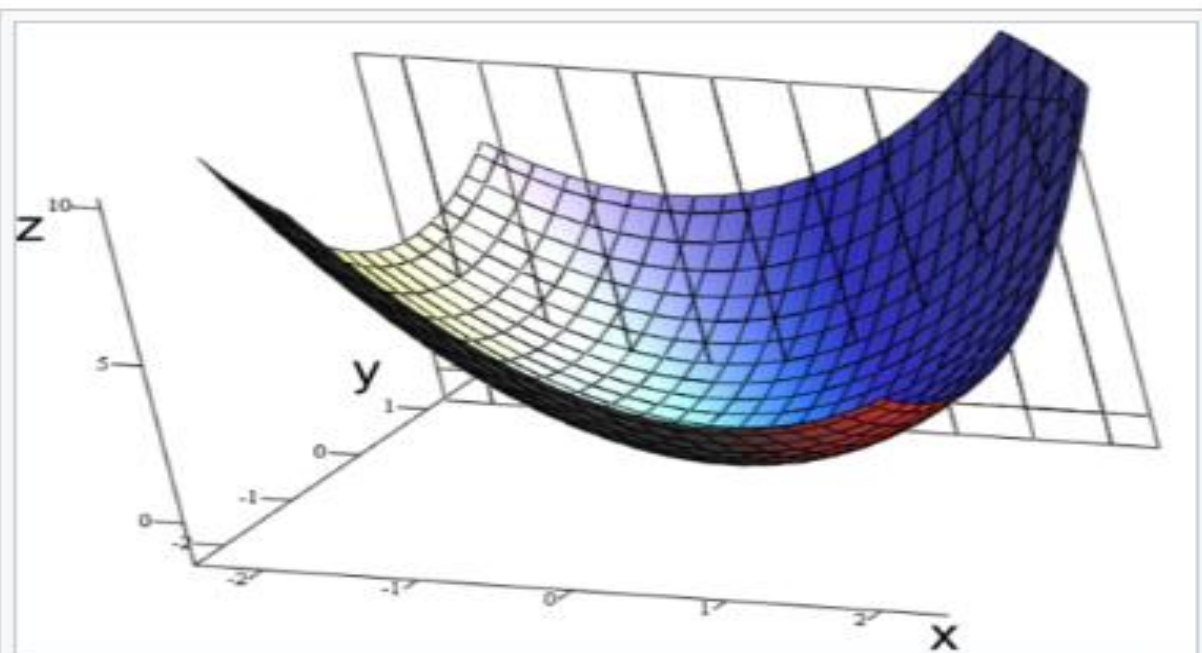


Not convex



Convex

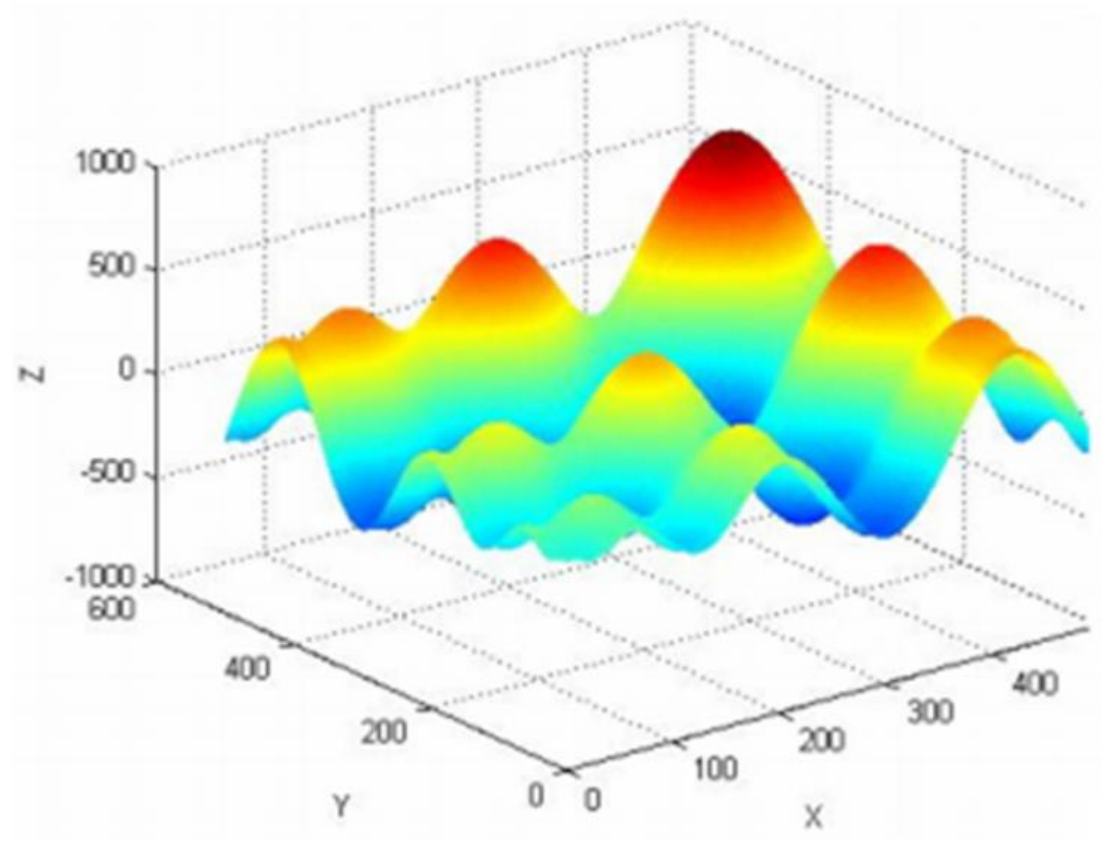




A graph of the **bivariate** convex function
 $x^2 + xy + y^2$.



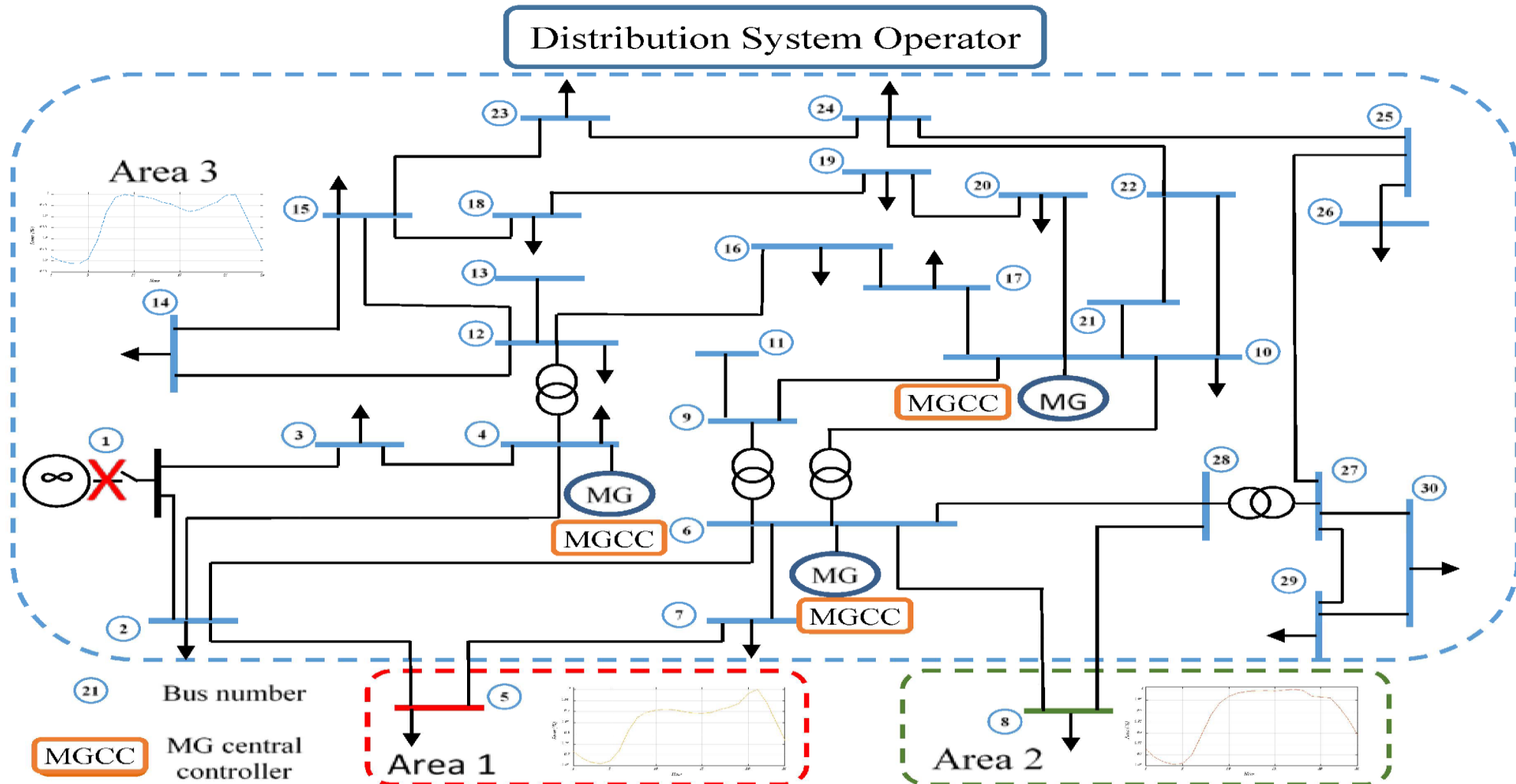
Non linear function



Optimization for Machine Learning

In the context of machine learning, optimization refers to the process of adjusting the parameters of a model to minimize (or maximize) some objective function. The objective function is often a measure of how well the model performs on a task, such as minimizing the error on a set of training data. The process involves finding the optimal set of parameters that result in the best performance of the model.

A sample distribution network



Petrol/Gasoline

- "Gasoline" and "petrol" are essentially the same thing: a liquid fuel derived from petroleum, used in [internal combustion engines](#).
- The terms are regional, with "gasoline" being the North American term, and "petrol" being the Commonwealth English term.
- Both are transparent, flammable liquids, and are refined from crude oil through fractional distillation.

Fuel Cell Basics

- A fuel cell is a device that generates electricity through an electrochemical reaction, not combustion.
- In a fuel cell, hydrogen and oxygen are combined to generate electricity, heat, and water.
- Fuel cells are used today in a range of applications, from providing power to homes and businesses, keeping critical facilities like hospitals, grocery stores, and data centers up and running, and moving a variety of vehicles including cars, buses, trucks, forklifts, trains, and more.

Fuel Cell Electric Vehicles

- Fuel cell electric vehicles (FCEVs) are [powered by hydrogen](#).
- They only emit water vapor and warm air.
- FCEVs and the [hydrogen infrastructure](#) to fuel them are in the early stages of implementation.
- The U.S. Department of Energy leads [research efforts](#) to make hydrogen-powered vehicles an affordable, environmentally friendly, and safe transportation option.
- Hydrogen is considered an alternative fuel under the [Energy Policy Act of 1992](#) and qualifies for alternative fuel vehicle [tax credits](#).

Hydrogen Fuel Cell Electric Vehicle

