In this paper, the fuzzy logic control for Maximum Power Point Tracking (MPPT) of a solar photovoltaic is presented. A photovoltaic system including a solar module, a DC/DC boost converter, a fuzzy MPP Tracker and a resistive load is modeled and simulated for various atmospheric conditions. The P-V characteristics are first obtained for various values of solar irradiation and temperature. Then the increased efficiency of the photovoltaic system using MPPT is computed and plotted. The fuzzy control method is compared with the Perturb/observe (P&O) method in one hand and with an Improved P&O technique using Artificial Neural Network (ANN) in the other hand.