A photovoltaic array exhibits non-linear I-v characteristics and its maximum power point varies with solar insolation, operating voltage and temperature. This work deals with the design and laboratory implementation of a real time microcontroller based maximum power tracker with the aim of improving conversion efficiency of the photovoltaic system. It is a digital dual tracking system that consists of a maximum point tracker (MPPT) that enables the PV array to operate at its maximum power point (MPP) and a solar path tracker, a machine for orienting the PV array towards the sun. The incremental conductance algorithm was developed using the voltage and current information and was able to track the maximum power quickly under rapid changing conditions. It was implemented using a single chip PC l 6C84 microcontroller to control the duty cycle of the boost converter with pulse width modulation. The microcontroller offered solution to weaknesses inherent in other types of control systems. Power feedback control was used to measure and maximize power at the load terminal. The MPPT consists of a DC-DC converter optimised for nominal output; a control section and a 12V 50 Ah lead acid battery as load. The solar path tracker consists of sensors, control circuitry, H-bridge, do motor and 40W polycrystalline solar panel. With reference to the set up where the panel was directly connected to the resistive load the solar path tracker (SPT) increased the performance by a factor of 1.29 while the maximum power point tracker (MPPT) increased the performance by 1.08. The maximum power tracker increased the performance by a factor of 1.49