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## EXPERT SYSTEMS AND SOLUTIONS

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### **AVR microcontroller based Solar tracking**

This is a power generating method from sunlight. This method of power generation is simple and is taken from natural resource. The aim of the project is to set the solar panel for maximum power generation using the maximum sunlight available. A stepper motor system is used for tracking maximum intensity of light. When there is decrease in intensity of light, this system automatically changes its direction to get maximum intensity of light.

Here we are using two sensors in two directions to sense the direction of maximum intensity of light. The difference between the outputs of the sensors is given to the AVR microcontroller unit.

It will process the input voltage from the comparison circuit and control the direction in which the motor has to be rotated so that it will receive maximum intensity of light from the sun. The power generated from this process is then stored in a lead acid battery and is made to charge an emergency light and is made to glow during night. The ATmega8535 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. ATmega8535 has such features as 8 KB of in-system programmable flash memory (i.e., read-while-write capabilities), 512-byte EEPROM, 512-byte SRAM, 32 general-purpose input/output (I/O) lines, 32 general-purpose working registers, three flexible timers/counters with compare modes, internal and external interrupts, a serially programmable USART, a byte-oriented two-wire serial interface, an 8-channel, 10-bit analogue-to-digital converter (ADC) with optional differential input stage with programmable gain, a programmable watchdog timer with internal oscillator, an SPI serial port, and six software-selectable power-saving modes. The AVR core combines a rich instruction set with 32 general-purpose working registers.

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