

Extremely low power Light Profiling device

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Plan

Extremely low power consuming local light profiling device.

5 directions.

Stores values for a month with half an hour resolution.

Each data point is an average over a minute.

Battery life up to 7 years

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Work Distribution

Software development - Akhilesh and Uttam

Mechanical Structure - Mervin

Embedding - Akhilesh, Mervin and Uttam

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The two descriptions of the two distinct parts of the device are:

1. Software: It is designed to put the microcontroller to 'Power_down' sleep mode and wake it up for a few milliseconds every half an hour, take the reading and put it back to sleep
2. Mechanical Structure: It is a rigid arrangement to house the microcontroller and the five photodiodes in an equi-solidangular arrangement to take the light intensities from five different directions. The best arrangement we came up with was five pyrimidal structures with 60 degree central angle arranged in a close-fitting fashion.

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Final Attributes

1. Extremely low power consumption <1 mAH per day (i.e. would run for > 6 years on a 2000 mAH battery)
2. Collects data every half an hour and stores over a month after which data is downloaded. Each data point is an average over a minute to avoid sudden fluctuations caused due to say, an eagle flying over the device.
3. Data along five directions is available at each point in time to calculate the optimum angle with maximum intensity

List of Components

1. Photodiodes – BPW21 – 5
2. Arduino Board
3. Cardboard and paper and other stationery
4. Battery
5. Connector
6. LED
7. Resistors