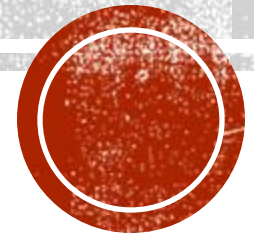


AGRITTECH MEETING 5

Prof Madhav Rao



DATA FORMATS

- Soil temperature : has precision of 2 - e.g. 30.06 this takes 15 bits. 5 bits for 30, 10bits for 0.06.
- Atmosphere temperature : has precision 1 – e.g. 29.7 this takes 15 bits. 5 bits for 29, 10 bits for 0.7
- Humidity : has precision 1 – e.g. 38.7 this takes 16 bits. 6 bits for 38, 10 bits for 0.7
- Soil moisture : It is analog data (range is from 0 to 1023) uses bits range from 1 to 9. But we are mapping it from 0 to 100 this takes bits from 1 to 7 bits.



IDEAS

- If we don't need precision of 1 or 2 then we can save lot of bits. If our message packet should have only 32bits, without precision we can pack 2 sets of data(soil temp and atmosphere temp) + 8bits(one data + 2bits can be used for something else). With precision we can pack only 1set of data (soil temp and atmosphere temp).
- Efficient way of sending data by reducing bits. If we know range of sensor value, we can manipulate it. For example, if we know temperature range varies in between (-7 to 7 from a certain value) then we can transmit just 4 bits in place of 6 bits at receiver side we add this certain value to that offset. By doing this we save 2 bits for each sensor value(without precision). By this method if the payload size is 32bit we can pack 4 sets of data(soil temp + atmosphere temp).



- <https://towardsdatascience.com/smart-way-of-storing-data-d22dd5077340>
- <https://www.kinematicsoup.com/news/2016/9/6/data-compression-bit-packing-101>
- <https://ethereum.stackexchange.com/questions/77099/efficient-bit-packing>

