



DEVELOPMENT OF LONG RANGE REMOTE CONTROL DEVICE

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INTRODUCTION

- ❖ We prefer and use remote controls in many parts of our lives. In daily life, the range of the remote controls we use mostly does not exceed a few meters and we need to hold the controls to the devices we control. What we aim for in this project is a little different from this concept. As it can be understood from the project title, we aim to make a long range remote control at the end of the period. We want to develop this project using LoRa technology. The name LoRa comes from the concept of "long range".

SPECIFICATIONS AND DESIGN REQUIREMENTS

- ❖ Use of LoRa technology
- ❖ Mobile (battery powered)
- ❖ Hand held (max. 1000gr including batteries)
- ❖ Telecommand at least 64 different equipments
- ❖ Working distance at least 1km.

SOLUTION METHODOLOGY

- ❖ Using a 4x4 keypad and an LCD screen is a sensible idea for telecommanding 64 equipments. Also there are several ways to make prototypes but I used Arduino clones (UNO and NANO) in the transmission and receiving part.

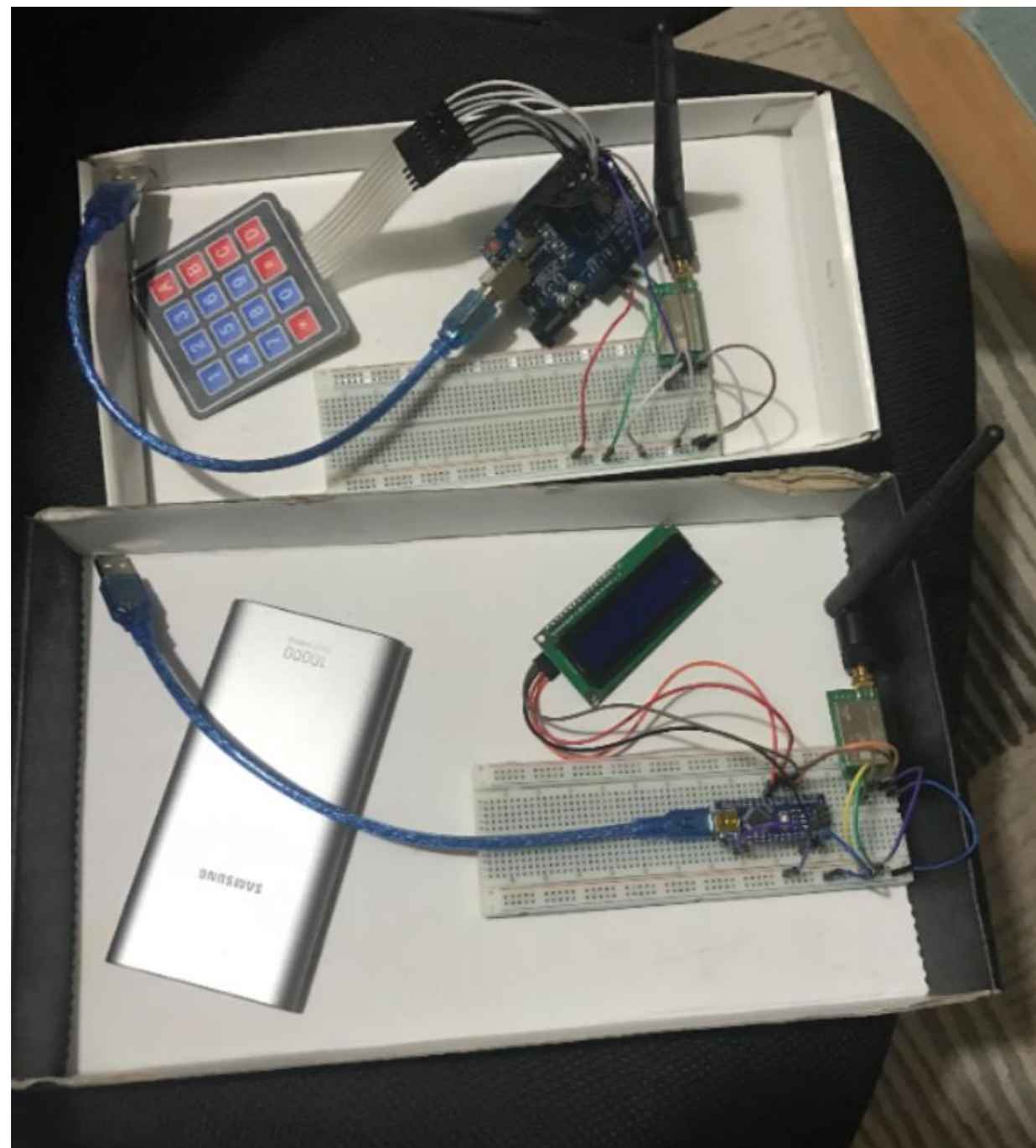
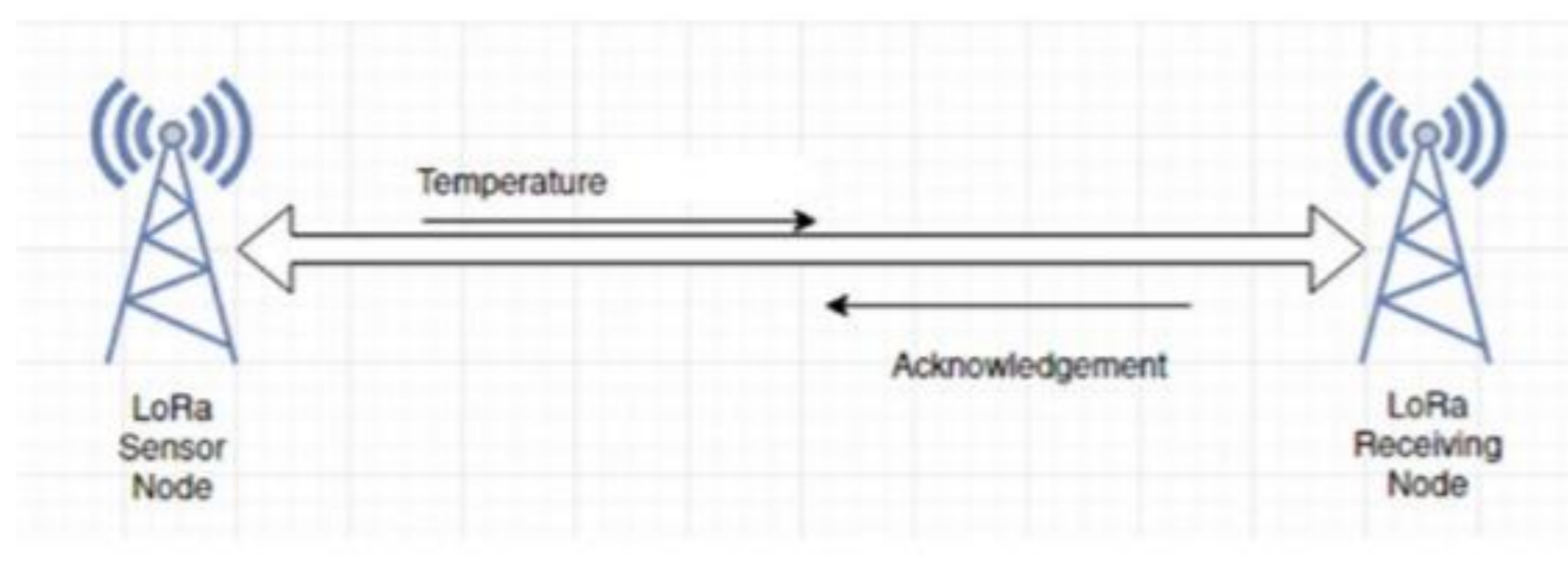


Figure: My final prototypes

- ❖ 2 SX1276 LoRa module are used in this Project, each has 868MHz frequency, 20 dBm power, 120mA current and 3000m range.
- ❖ Rubber duck antennas are used, with 868MHz frequency and 3dBi gain each.
- ❖ I preferred to use powerbanks for supply. Each powerbank has around 200g weight.



APPLICATION AREAS

- ❖ Agriculture
- ❖ Smart home, smart industry applications
- ❖ Factories and working areas
- ❖ Automation and distant control

RESULTS AND DISCUSSION

- ❖ We can easily send small data by using these modules and for a lot of areas it's useful. Better results could be had by using better but of course more expensive equipments.
- ❖ In 1km range, we can send 2 digit numbers from the transmitting part and read them from the receiving part.
- ❖ The conditions and conditions we test in such projects are also very important. I think we can reach higher ranges in more favorable weather conditions.
- ❖ Factors such as altitude differences and the resulting pressure and temperature changes, humidity in the air cause negative effects on the transmission of data by the antennas. In our test, we paid attention to the linear change of the distance and the height to remain the same.



REFERENCES

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