**Literature Review**

1. FILE NAME: lora\_tps\_r1342

TITLE: LoRa Transmission Parameter Selection

ABOUT: Algorithm to choosing LoRa parameters for long range in a network

CITE:

@INPROCEEDINGS{8271941,

author={Bor, Martin and Roedig, Utz},

booktitle={2017 13th International Conference on Distributed Computing in Sensor Systems (DCOSS)},

title={LoRa Transmission Parameter Selection},

year={2017},

volume={},

number={},

pages={27-34},

doi={10.1109/DCOSS.2017.10}}

1. FILE NAME: Valencia\_2019] LoRa Transmission System for Weather Balloons

TITLE: LoRa Transmission System for Weather Balloons

ABOUT: LORA module used to transmit Radiosonde data 10km high successfully (Project

Inspiration)

CITE:

@INPROCEEDINGS{9072712,

author={Valencia, May Anne C. and Cruz, Febus Reidj G. and Balakit, Raymart B.},

booktitle={2019 IEEE 11th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management ( HNICEM )},

title={LoRa Transmission System for Weather Balloons},

year={2019},

volume={},

number={},

pages={1-5},

doi={10.1109/HNICEM48295.2019.9072712}}

1. FILE NAME: 1804.00503

TITLE: Decoding Superposed LoRa Signals

ABOUT: Proposed 2 methods for signal decoding to overcome signal interference (Useful for explaining LoRa

CITE:

@INPROCEEDINGS{8638253,

author={Rachkidy, Nancy El and Guitton, Alexre and Kaneko, Megumi},

booktitle={2018 IEEE 43rd Conference on Local Computer Networks (LCN)},

title={Decoding Superposed LoRa Signals},

year={2018},

volume={},

number={},

pages={184-190},

doi={10.1109/LCN.2018.8638253}}

1. FILE NAME: Evaluation\_of\_Low-Power\_Long\_Distance\_Radio\_Communication\_in\_ Urban\_Areas\_ LoRa\_and\_Impact\_of\_Spreading\_Factor

TITLE: Evaluation of Low-Power Long Distance Radio Communication in Urban Areas: LoRa and Impact of Spreading Factor

ABOUT: Testing of lora parameters in urban areas with no line of site

CITE:

@INPROCEEDINGS{8723666,

author={Sağır, Selim and Kaya, İsmail and Şişman, Cem and Baltacı, Yusuf and Ünal, Sefa},

booktitle={2019 Seventh International Conference on Digital Information Processing and Communications (ICDIPC)},

title={Evaluation of Low-Power Long Distance Radio Communication in Urban Areas: LoRa and Impact of Spreading Factor},

year={2019},

volume={},

number={},

pages={68-71},

doi={10.1109/ICDIPC.2019.8723666}}

1. FILE NAME: A\_Study\_of\_LoRa\_Coverage\_\_\_\_\_\_Range\_Evaluation\_and\_Channel\_Attenuation\_Model

TITLE: A Study of LoRa Coverage : Range Evaluation and Channel Attenuation Model

ABOUT: Testing the possible coverage and the loss in LORA data in terms of the RSSI and SNR

CITE:

@INPROCEEDINGS{8584548,

author={Seye, Madoune R. and Ngom, Bassirou and Gueye, Bamba and Diallo, Moussa},

booktitle={2018 1st International Conference on Smart Cities and Communities (SCCIC)},

title={A Study of LoRa Coverage: Range Evaluation and Channel Attenuation Model},

year={2018},

volume={},

number={},

pages={1-4},

doi={10.1109/SCCIC.2018.8584548}}

1. FILE NAME: A\_study\_of\_LoRa\_low\_power\_and\_wide\_area\_network\_technology

TITLE: A Study of LoRa Low Power and Wide Area Network Technology

ABOUT: Develops the relationships between SF, Coding Rate and Bandwidth

CITE:

@INPROCEEDINGS{8075570,

author={Noreen, Umber and Bounceur, Ahcène and Clavier, Laurent},

booktitle={2017 International Conference on Advanced Technologies for Signal and Image Processing (ATSIP)},

title={A study of LoRa low power and wide area network technology},

year={2017},

volume={},

number={},

pages={1-6},

doi={10.1109/ATSIP.2017.8075570}}

1. FILE NAME: Data\_Compression\_in\_Wireless\_Sensor\_Nodes\_with\_LoRa

TITLE: Data Compression in Wireless Sensor Nodes with LoRa

ABOUT: Explores data compression algorithms with spread spectrum tech proving to be successful

CITE:

@INPROCEEDINGS{8679003,

author={Săcăleanu, D. I. and Popescu, R. and Manciu, I. P. and Perişoară, L. A.},

booktitle={2018 10th International Conference on Electronics, Computers and Artificial Intelligence (ECAI)},

title={Data Compression in Wireless Sensor Nodes with LoRa},

year={2018},

volume={},

number={},

pages={1-4},

doi={10.1109/ECAI.2018.8679003}}

1. FILE NAME: Deep\_Learning\_Semantic\_Compression\_IoT\_Support\_over\_LORA\_Use\_Case

TITLE: Deep Learning Semantic Compression: IoT Support over LORA Use Case

ABOUT: Proposes an AI method to limit data being sent be determining patterns on transceiver end and reproducing those patterns on the receiver end using neural networks

CITE:

@INPROCEEDINGS{8988571,

author={Dridi, Aicha and Debar, Arnaud and Gauthier, Vincent and Khedher, Hatem Ibn and Afifi, Hossam},

booktitle={2019 2nd IEEE Middle East and North Africa COMMunications Conference (MENACOMM)},

title={Deep Learning Semantic Compression: IoT Support over LORA Use Case},

year={2019},

volume={},

number={},

pages={1-6},

doi={10.1109/MENACOMM46666.2019.8988571}}

1. FILE NAME: Development\_of\_Huffman\_Code\_for\_Lora\_Technology

TITLE: Development of Huffman Code for LORA Technology

ABOUT: explores the outcome of ASCII and Huffman encoding for data transmission in LoRa with Huffman encoding being better

CITE:

@INPROCEEDINGS{9060099,

author={Pongpunpurt, Pramoth and Khawsuk, Weerawat and Sutthisangiam, Nikorn},

booktitle={2019 IEEE SmartWorld, Ubiquitous Intelligence Computing, Advanced Trusted Computing, Scalable Computing Communications, Cloud Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCom/IOP/SCI)},

title={Development of Huffman Code for Lora Technology},

year={2019},

volume={},

number={},

pages={1882-1887},

doi={10.1109/SmartWorld-UIC-ATC-SCALCOM-IOP-SCI.2019.00331}}

1. FILE NAME: Embedded\_system\_for\_monitoring\_atmospheric\_weather\_conditions\_using\_weather\_balloon

TITLE: Embedded System for Monitoring Atmospheric Weather Conditions Using Weather Balloon

ABOUT: Shows the current technology used for weather balloon communication being radio signal communication with embedded systems NoT ReAlLy UsEfUl

CITE:

@INPROCEEDINGS{5204416,

author={Sankar, P. and Norman, Suresh. R.},

booktitle={2009 International Conference on Control, Automation, Communication and Energy Conservation},

title={Embedded system for monitoring atmospheric weather conditions using weather balloon},

year={2009},

volume={},

number={},

pages={1-4},

doi={}}

1. FILE NAME: Sonde\_Instrumentation\_for\_Upper\_Air\_Weather\_Monitoring\_System

TITLE: Sonde Instrumentation for Upper Air Weather Monitoring System

ABOUT: Another current technology for weather balloon communication via a radio module

CITE:

@INPROCEEDINGS{9072802,

author={Balakit, Raymart B. and Cruz, Febus Reidj G. and Valencia, May Anne C.},

booktitle={2019 IEEE 11th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management ( HNICEM )},

title={Sonde Instrumentation for Upper Air Weather Monitoring System},

year={2019},

volume={},

number={},

pages={1-5},

doi={10.1109/HNICEM48295.2019.9072802}}

1. FILE NAME: n/a

TITLE: Platform for IoT

ABOUT: Semtech official site explaining LORA

CITE: "Platform for IoT", *Semtech.com*, 2021. [Online]. Available: https://www.semtech.com/lora. [Accessed: 05- Oct- 2021].

1. FILE NAME: n/a

TITLE: Platform for IoT

ABOUT: Article on the invention of LORA

CITE: "Cycleo unveils its first innovative semiconductor IP bringing unprecedented range to wireless data transmission", *Design And Reuse*, 2021. [Online]. Available: https://www.design-reuse.com/news/21552/wireless-semiconductor-ip.html. [Accessed: 05- Oct- 2021].

1. FILE NAME: n/a

TITLE: What are LORA and LORAWAN

ABOUT: Semtech description of LoRa and LoRaWAN

CITE: "LoRa and LoRaWAN: Technical overview | DEVELOPER PORTAL", *Lora-developers.semtech.com*, 2021. [Online]. Available: https://lora-developers.semtech.com/documentation/tech-papers-and-guides/lora-and-lorawan/. [Accessed: 06- Oct- 2021].

1. Title: Radiosonde Data link

CITE: <https://ruc.noaa.gov/raobs/>

1. FILE NAME: Internet\_of\_Things\_IoT\_using\_LoRa\_technology

TITLE: Internet of Things (IoT) using LoRa technology

ABOUT: Explores LoRa usage in small building areas for IOT applications

CITE: @INPROCEEDINGS{8825008,

author={Zourmand, Alireza and Kun Hing, Andrew Lai and Wai Hung, Chan and AbdulRehman, Mohammad},

booktitle={2019 IEEE International Conference on Automatic Control and Intelligent Systems (I2CACIS)},

title={Internet of Things (IoT) using LoRa technology},

year={2019},

volume={},

number={},

pages={324-330},

doi={10.1109/I2CACIS.2019.8825008}}

1. FILE NAME: Interference\_Analysis\_for\_LoRa\_Chirp\_Spread\_Spectrum\_Signals

TITLE: Interference Analysis for LoRa Chirp Spread Spectrum Signals

ABOUT: effect of interference from other LoRa devices

CITE:

@INPROCEEDINGS{8861956, author={Dunlop, Brody and Nguyen, Ha H. and Barton, R. and Henry, J.}, booktitle={2019 IEEE Canadian Conference of Electrical and Computer Engineering (CCECE)}, title={Interference Analysis for LoRa Chirp Spread Spectrum Signals}, year={2019}, volume={}, number={}, pages={1-5}, doi={10.1109/CCECE.2019.8861956}}

1. FILE NAME: Investigation\_of\_Methods\_for\_Ensuring\_Electromagnetic\_Compatibility\_of\_Atmospheric\_Radiosonde\_Systems

TITLE: Investigation of Methods for Ensuring Electromagnetic Compatibility of Atmospheric Radiosonde Systems

ABOUT: Explores current radiosonde technology as well as the electromagnetic interference

CITE:

@INPROCEEDINGS{8813924,

author={Malygin, I. V. and Ivanov, V. E.},

booktitle={2019 Systems of Signal Synchronization, Generating and Processing in Telecommunications (SYNCHROINFO)},

title={Investigation of Methods for Ensuring Electromagnetic Compatibility of Atmospheric Radiosonde Systems},

year={2019},

volume={},

number={},

pages={1-4},

doi={10.1109/SYNCHROINFO.2019.8813924}}

1. FILE NAME: On\_the\_Utility\_of\_Chirp\_Modulation\_for\_Digital\_Signaling

TITLE: On the Utility of Chirp Modulation for Digital Signalling

ABOUT: Outlines Chirp Spread Spectrum technology vs FSK for digital signals

CITE:

@ARTICLE{1091721,

author={Berni, A. and Gregg, W.},

journal={IEEE Transactions on Communications},

title={On the Utility of Chirp Modulation for Digital Signalling},

year={1973},

volume={21},

number={6},

pages={748-751},

doi={10.1109/TCOM.1973.1091721}}

1. FILE NAME: Feasibility\_of\_Networking\_Technology\_for\_Smart\_Farm\_LoRa\_vs\_APRS

TITLE: Feasibility of Networking Technology for Smart Farm: LoRa vs APRS

ABOUT: Explores the feasibility of using Lora for farming applications and gives an implementation

CITE:

@INPROCEEDINGS{9191428, author={Lee, Hyuk and Jang, Woojin and Yoon, Hye Won and Kim, Dong Jun and Jung, Heejae and Choi, Gowoon and Lee, Miran and Weon, Chaehee and Smith, Anthony}, booktitle={2020 International Conference on Omni-layer Intelligent Systems (COINS)}, title={Feasibility of Networking Technology for Smart Farm: LoRa vs APRS}, year={2020}, volume={}, number={}, pages={1-6}, doi={10.1109/COINS49042.2020.9191428}}