

## FAM: Fields Around Me

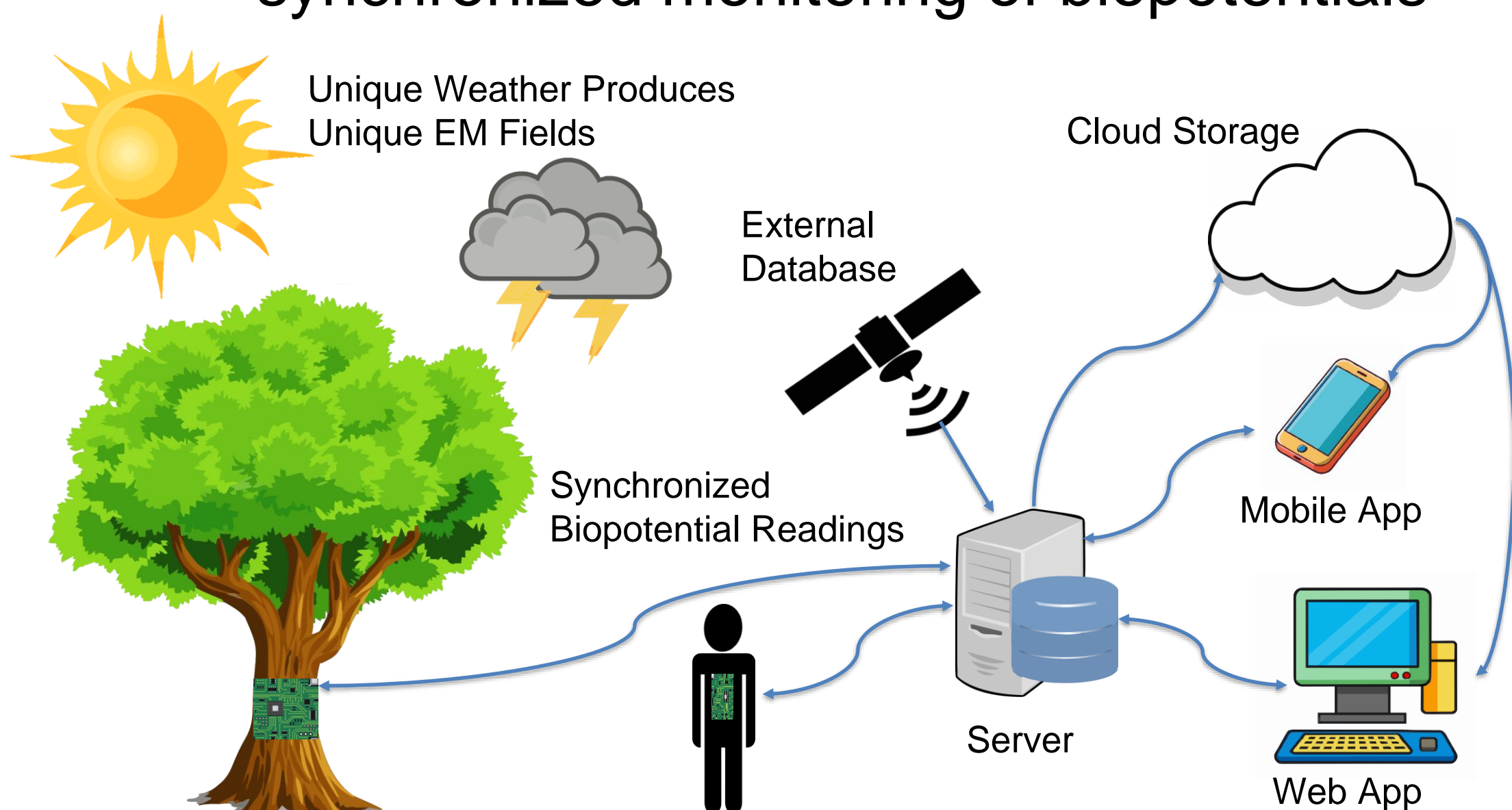
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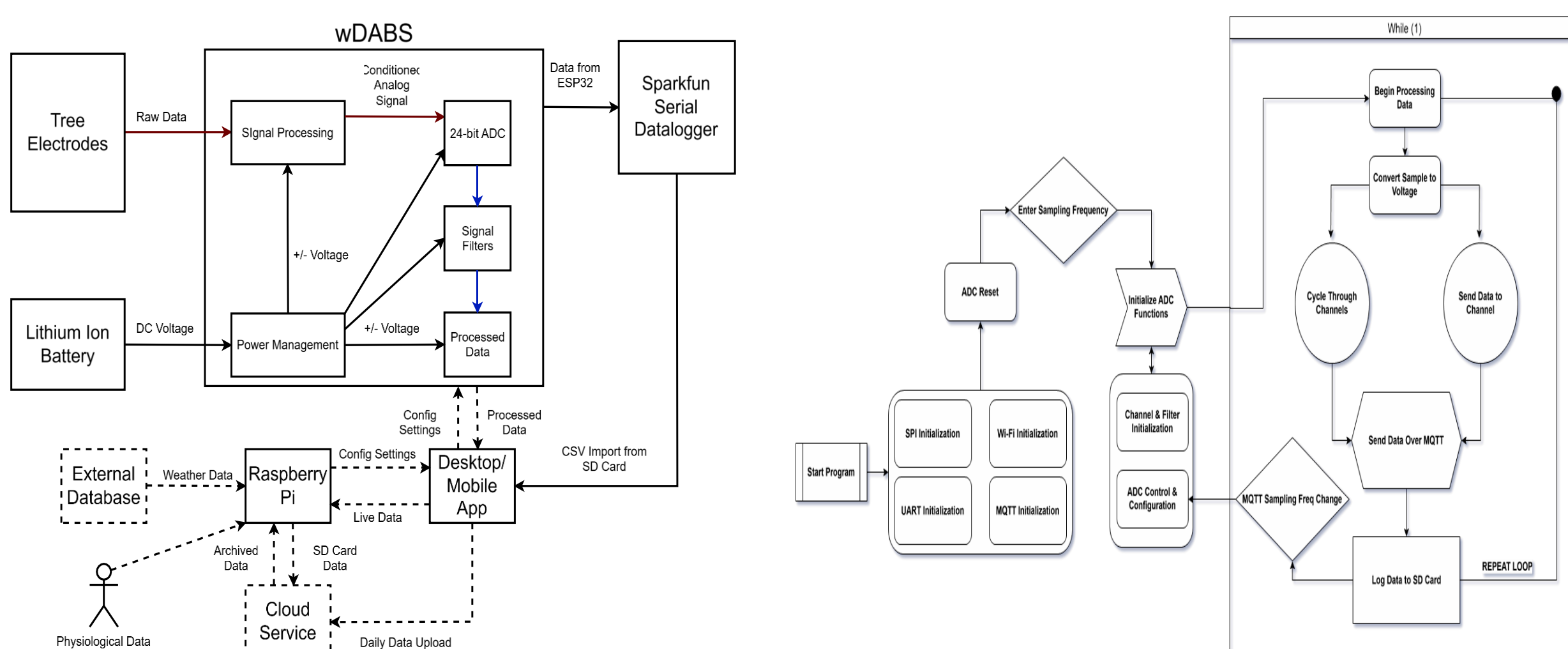
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### Summary

- Electromagnetic Fields significantly influence human health
- Up to 5% increase in heart attacks during periods of increased solar flare activity
- Lack of reliable methods to assess effects of External Electromagnetic Fields on Human Health
- Wireless Sensor Network facilitate synchronized monitoring of biopotentials



### System Design



- FAM sensor is a wireless DC accurate bio-sensor (wDABS)
- WDABS uses ESP32-S3 to communicate with the gateway and synchronize with the wDABS sensors
- Online databases provide environmental conditions and space weather forecast
- Personal physiological records accessed from the personal health record for personalization of the model

### Acknowledgements and References

A massive thank you to our mentor and sponsor for this project Dr. Emil Jovanov for his continued support and invaluable guidance throughout the whole project, and Linda Perry from Adtran for PCB Assembly Assistance. Abdulah Mahayni, Agata Sularz, Gerardo Lo Russo, Hasan S. Alarouri, Mohamad Adnan Alkhoul, SOLAR DANGER: SOLAR FLARES ARE ASSOCIATED WITH HIGHER RATES OF HEART FAILURE RELATED HOSPITALIZATIONS AND DEATHS

### Requirements

Marketing Requirements	Engineering Requirements
<b>M1:</b> The FAM system must be able to collect biopotential data of biological organisms and correlate this collected data to changes in Earth's electromagnetic field.	<b>E23:</b> The device must be able to use Biopotential Electrodes to Measure the Biopotential of the Human Body
<b>M2:</b> The biopotential signals must be collected using a wireless DC accurate bio-sensor (wDABS)	<b>E22:</b> wDABS sensors must be synchronized within 100ms delay.
<b>M18:</b> The server must allow the synchronization of multiple wDABS data.	<b>E18:</b> The user must be able to view relevant databases on the desktop app from TreeRhythms, SWIRLL, DONKI, and NOAA

### Final Results & Conclusion

- wDABS put us one step closer to realizing the threat of EMF on our health
- Higher sampling speeds open up possible Ultradian Frequency Correlations
- FAM Server Framework allows for inclusion of more External Data Sources with minimal development
- Future endeavors: Improve wDABS sync, Optimize Embedded Code, Dynamic CNN Correlation

