A/C Preference Troubleshooting Device

04-Feb-2020

Team Introductions

John Bradshaw
Team Leader

Edine Landoure
Design Engineer

Woodley Fevrius
Systems Engineer

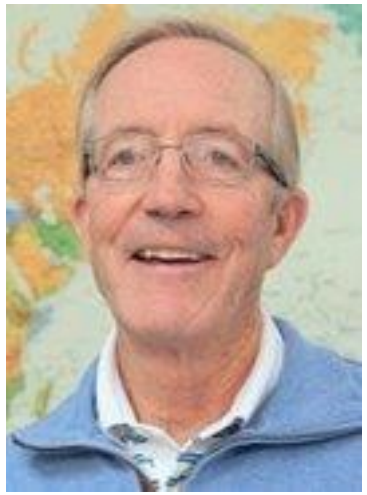
Darryl Brooks
Tech Lead

Curtis Rahman
Software Engineer

Manuel Urbina
Programmer Specialist

Woodley Fevrius

Sponsor



Dr. Devine is the project sponsor, and the Entrepreneur in Residence at the FAMU-FSU College of Engineering.

Woodley Fevrius

Advisors

ME Advisor
Dr. Shayne McConomy

Project Advisor
Dr. Neda Yahgoobian

ECE Advisor
Dr. Jerris Hooker

Woodley Fevrius

Objective

- Design a device that allows for the optimization of individual preferences and integrates itself with the A/C system.

Past Work : Project Scope

- Optimize environmental conditions
- Design an air conditioning control system
- Satisfy key customer needs while being energy efficient
- Market final design for various real-world applications and uses

Past Work: Markets

Primary

- Businesses
- Schools
- Hospitals

Secondary Markets

- Residential Housing

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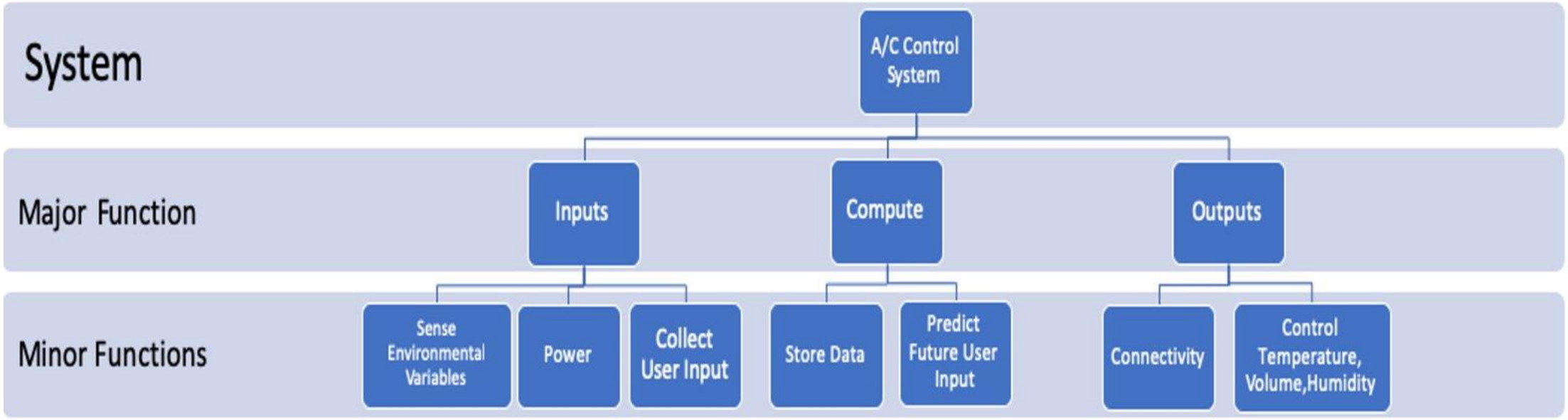
Past Work: Functional Decomposition



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Concept Generation

Communication Method	Type of Data Manipulation	Environmental Outputs
RFID	SQL	Temperature
		Volume of Air
BlueTooth	Fuzzy Logic	Humidity (Moisture in Air)
		Temperature and Volume
Application	Supervised Learning	Temperature and Humidity
		Air Flow

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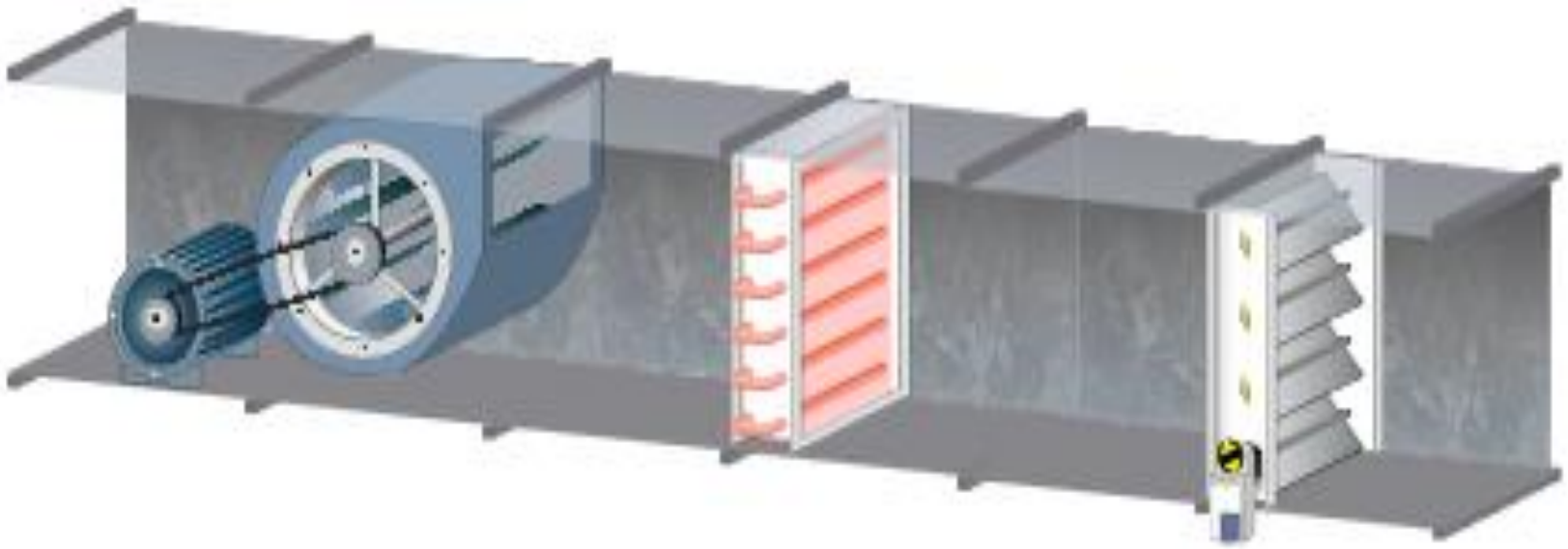
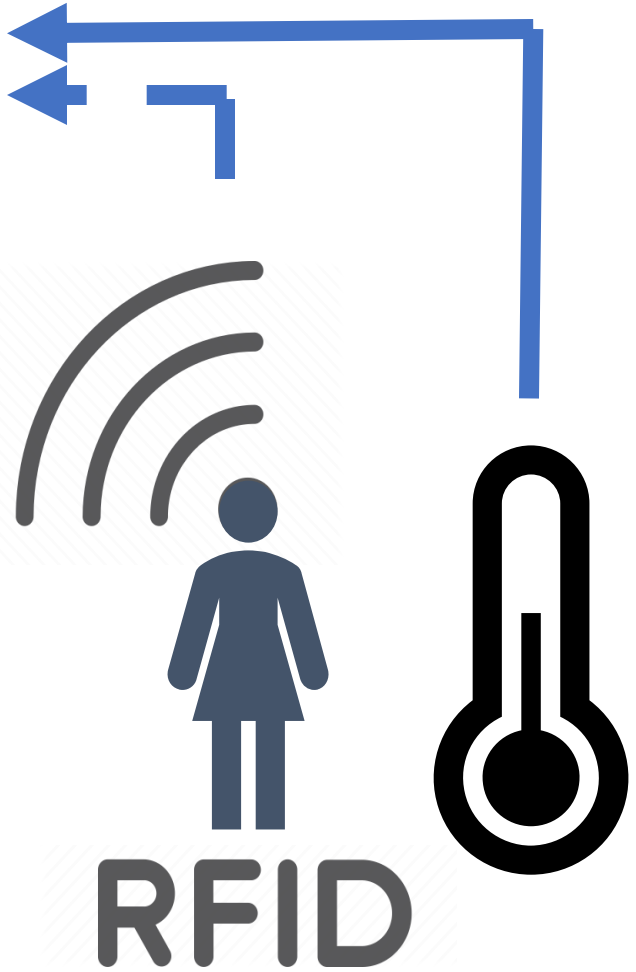
The Prototype





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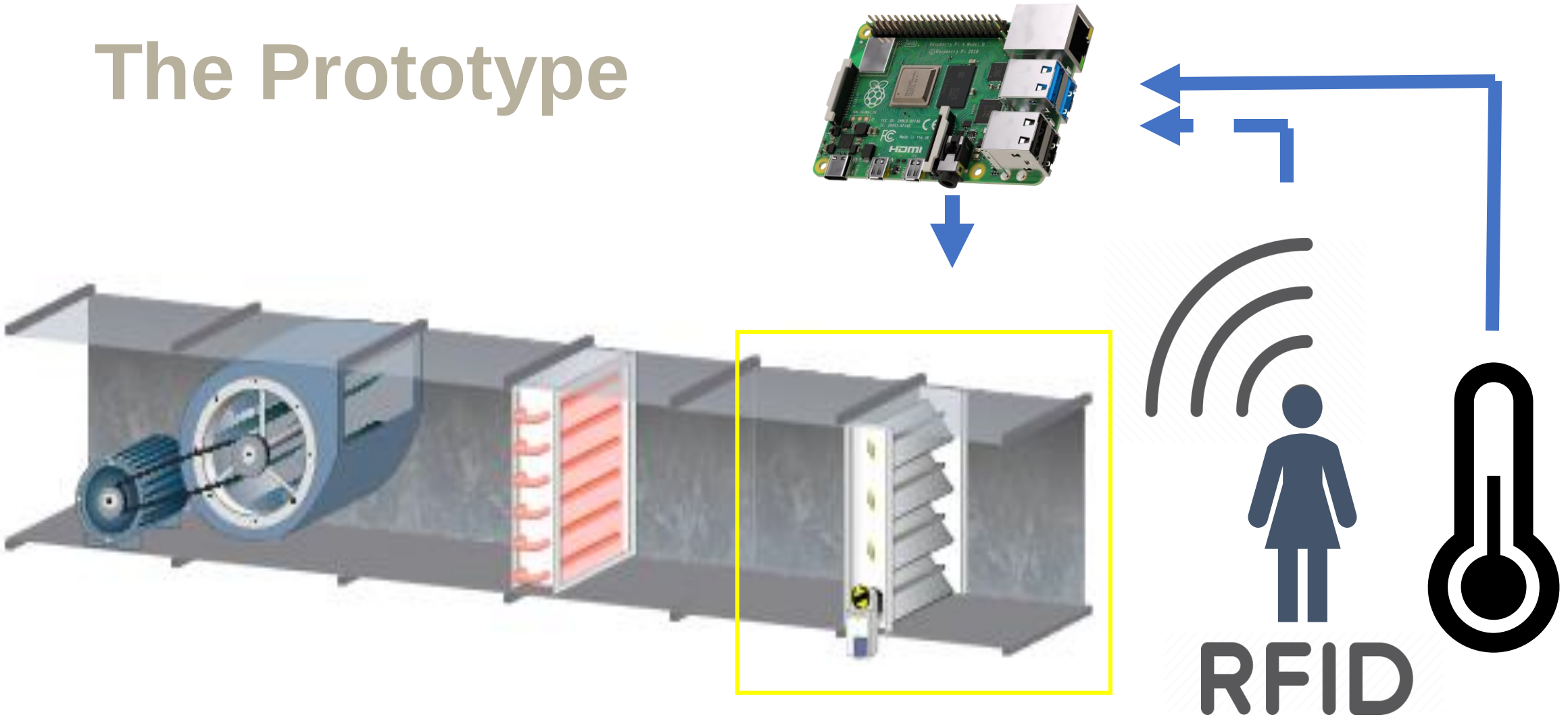
The Prototype



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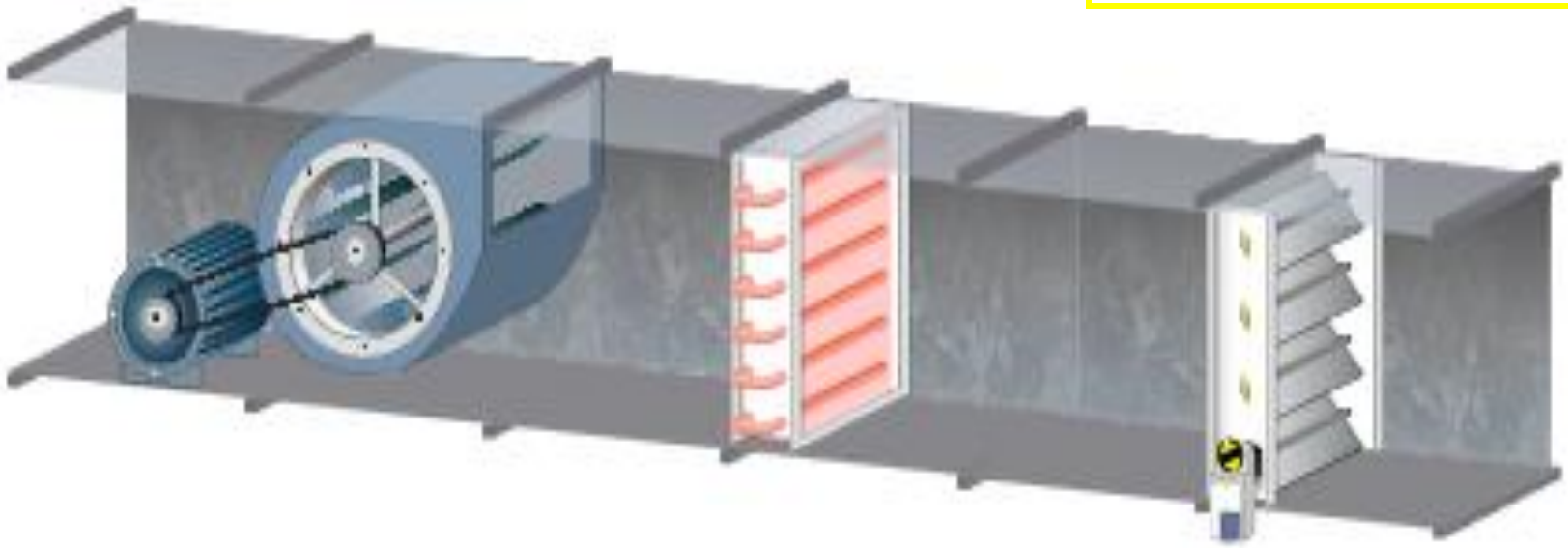

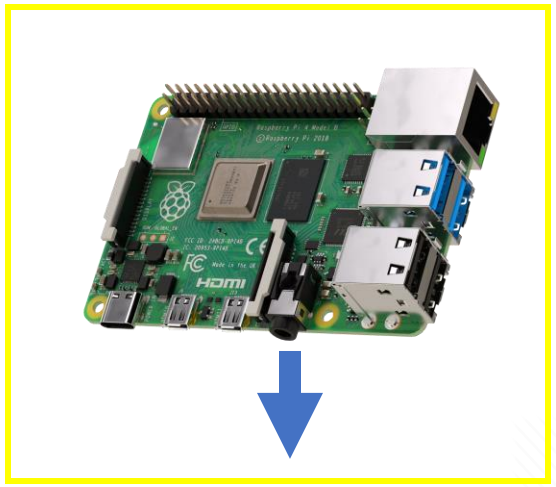

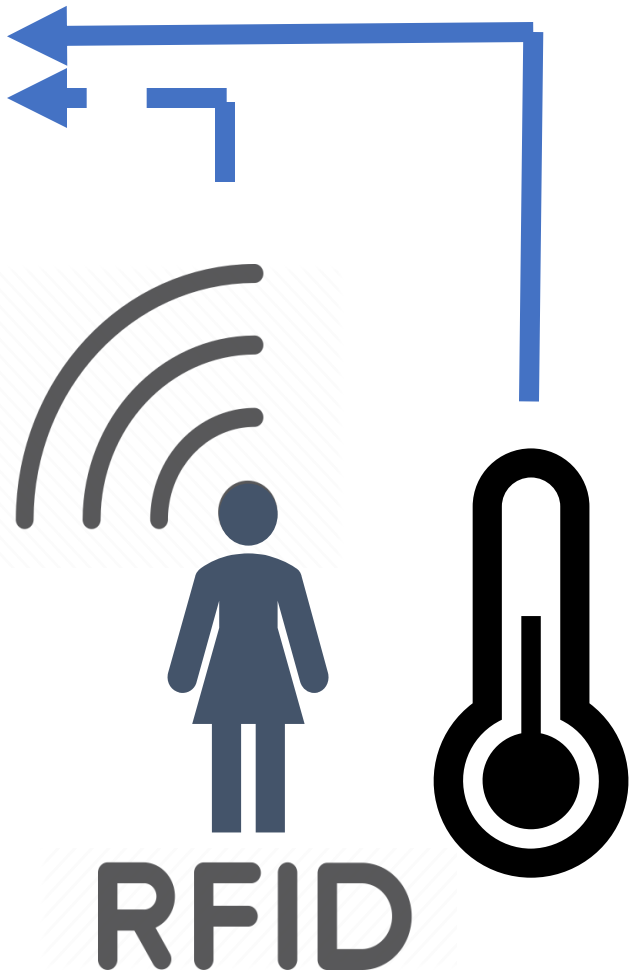

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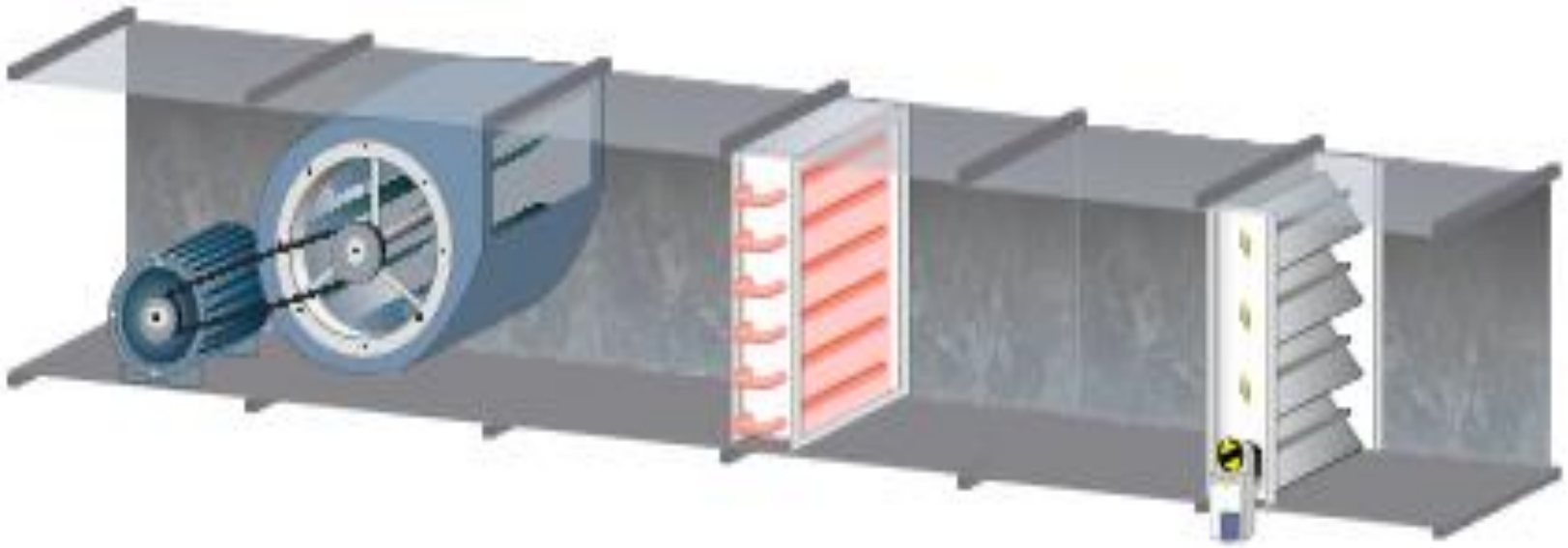
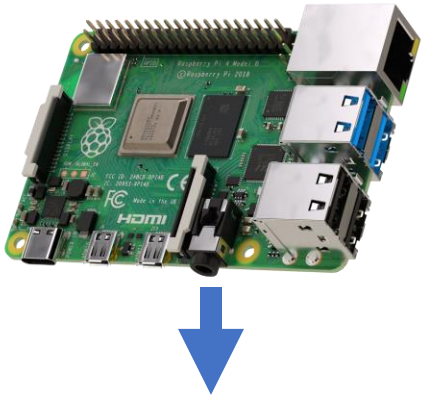
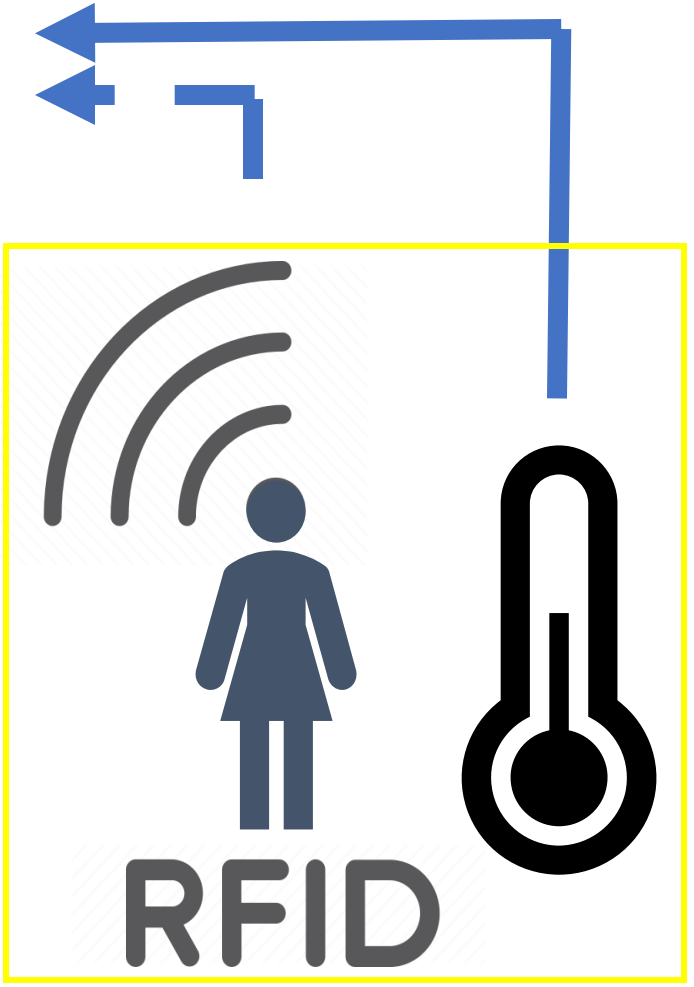
The Prototype







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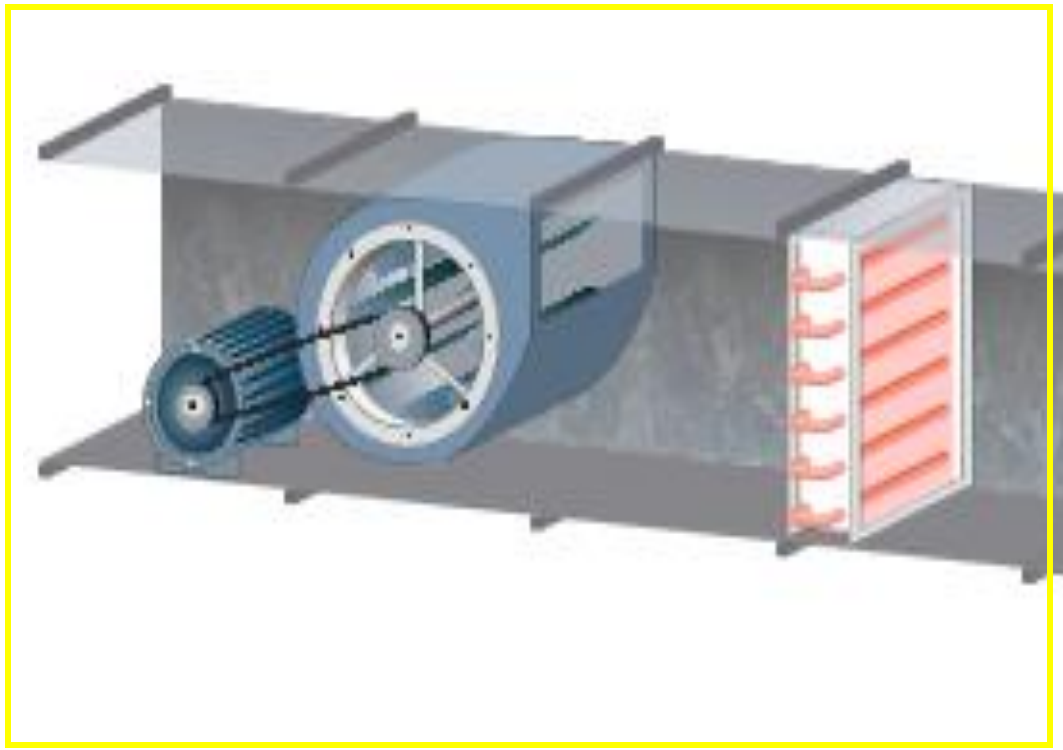
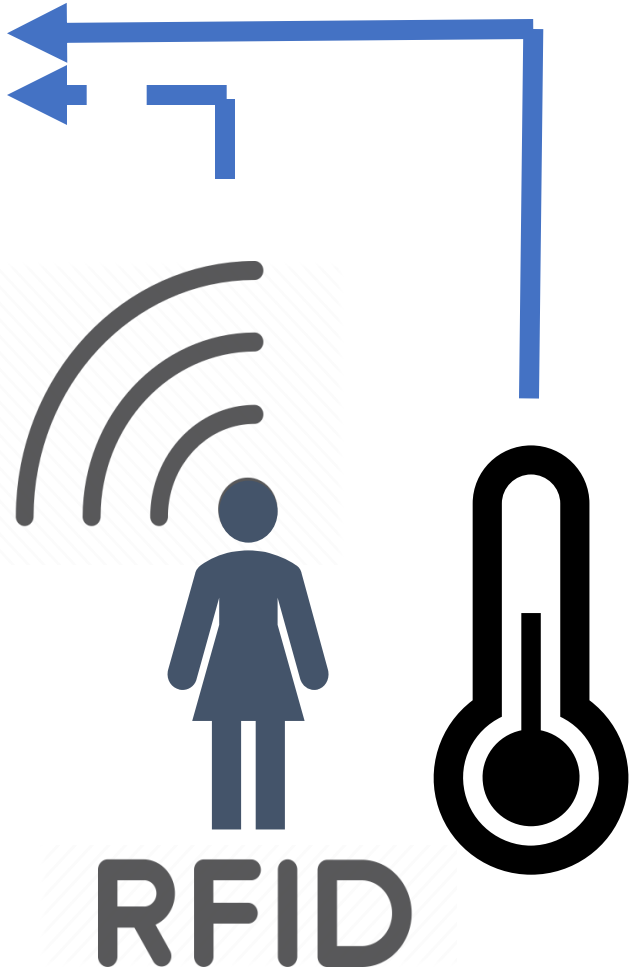
The Prototype





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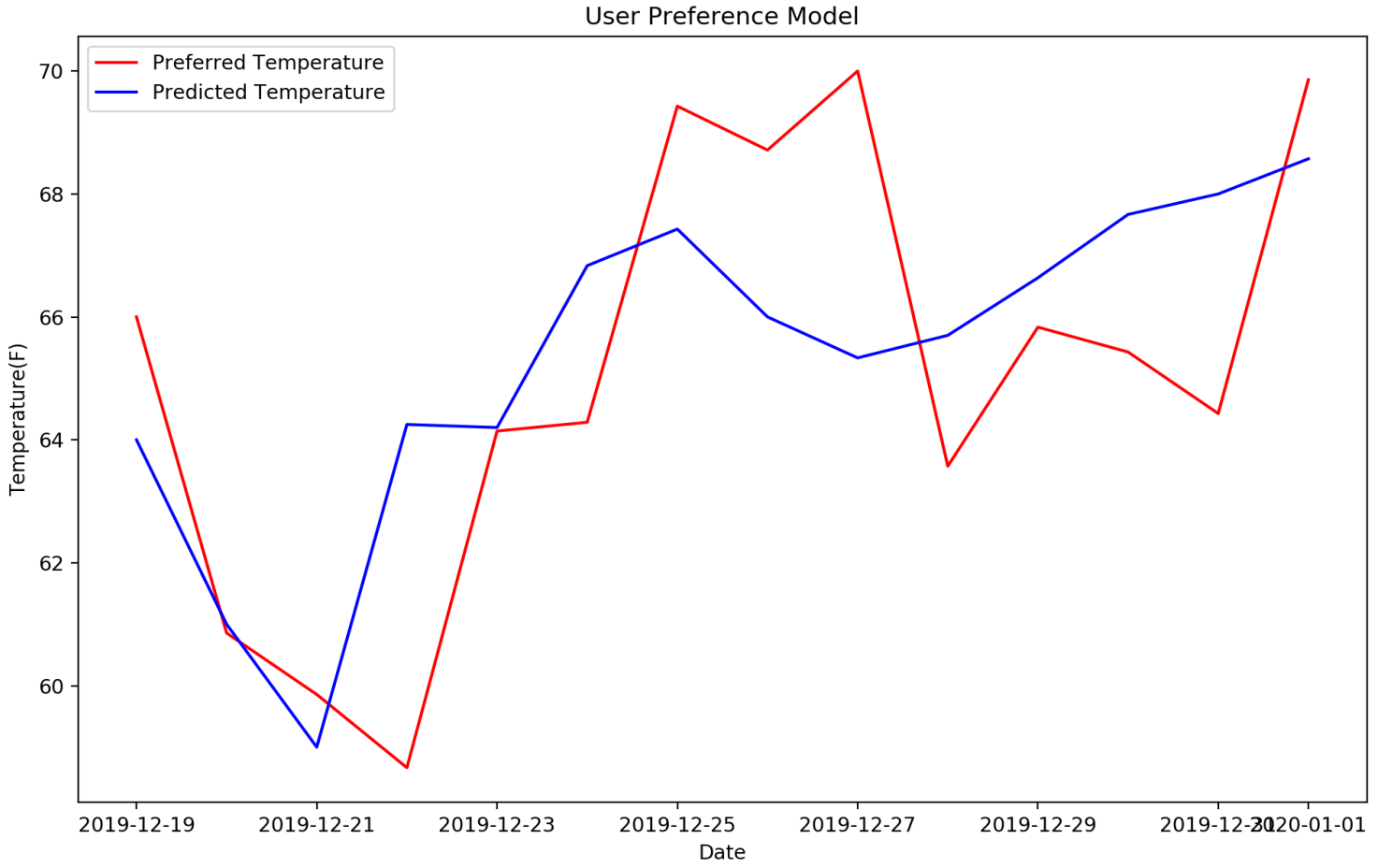
Software

- The software can, and will be able to, use previous inputs to predict preferences.
- Right now it performs a simple average so it can acquire the output temperature require.
- For the moment, a simple database is run locally on the device.

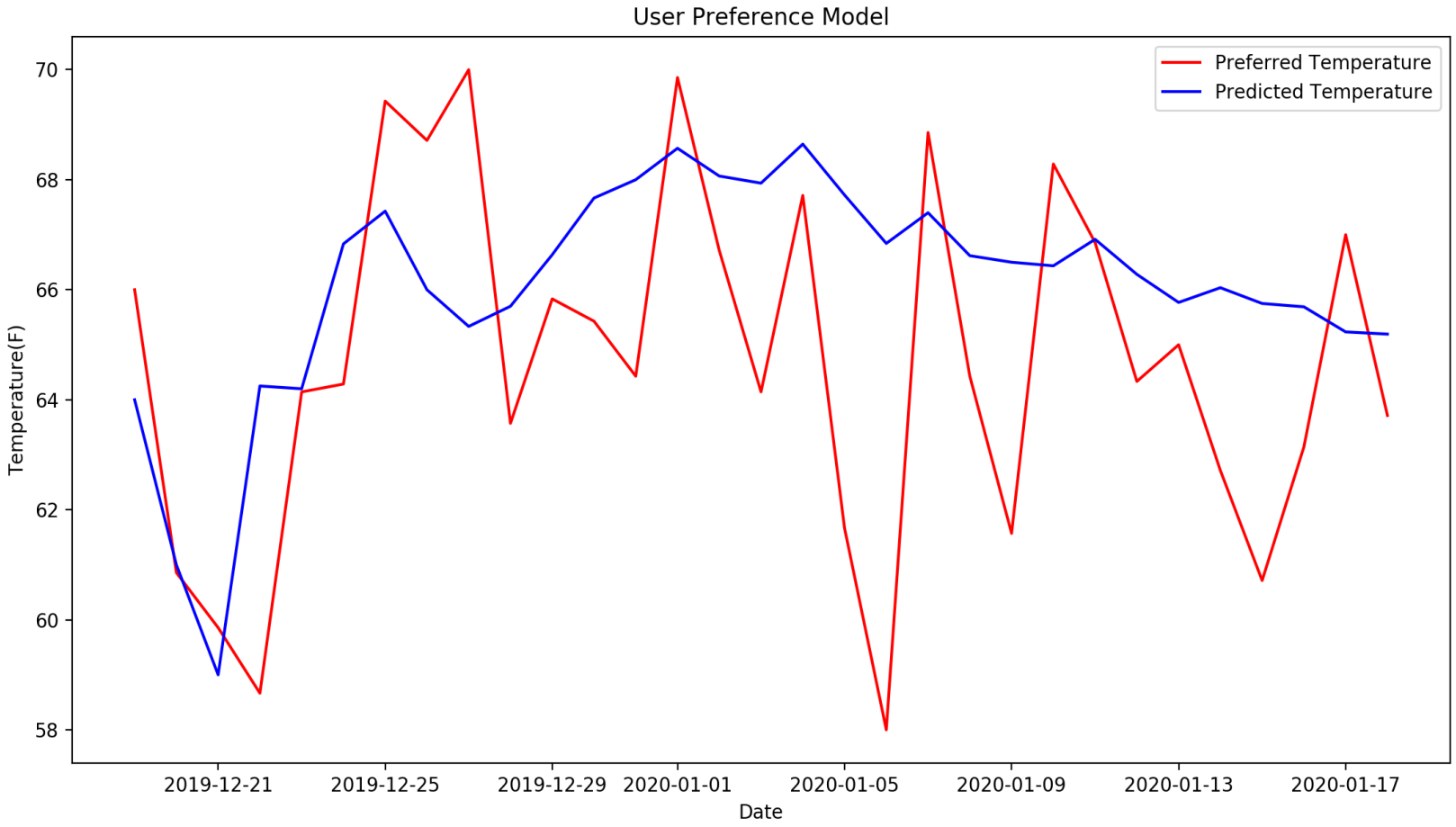
Manuel Urbina

2 Weeks of Learning



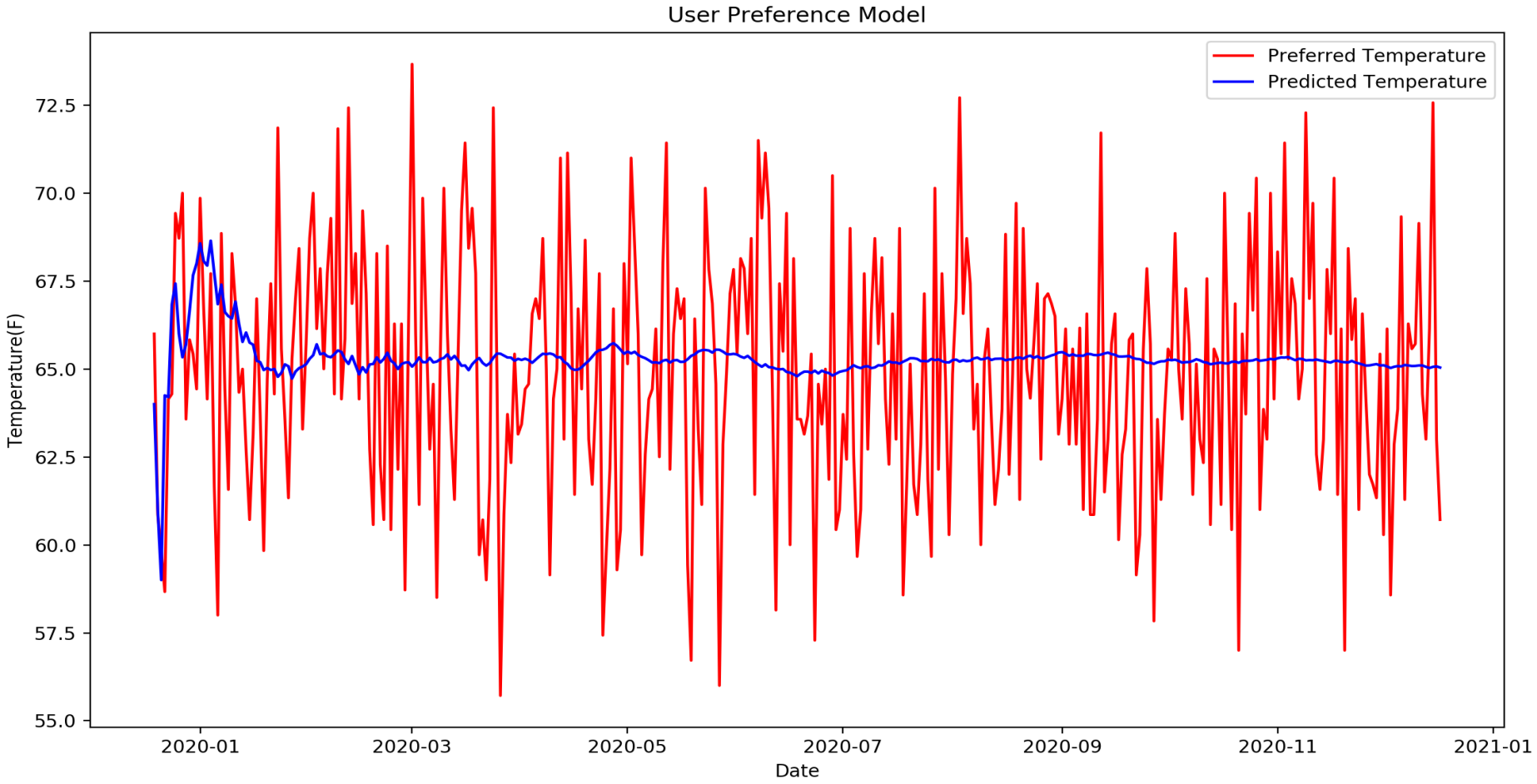
Manuel Urbina

Month of Learning



Manuel Urbina

Year of Learning



Manuel Urbina

RFID Data Abstraction

- Unique ID attached to each user via RFID(radio frequency identification) passive chip
- Determine ID upon entry of room
- Gather data and attach to each user's "pool" in the database
- Log user, date, time, temperature

Manuel Urbina

Big Data Handling

- Ability to handle larger pools of data.
- Intel Edison and Arduino Uno allow a bigger handling of data.
- Possible cloud storages: Amazon Web services, Microsoft Azure and Google Cloud Platform.
- Keeping all user's information secure.

Future Works and Improvements

- Give Pitch at InNOLEvation
- Begin Engineering Shark Tank Competition
- Integrate Individual Systems
- Validate and Refine Software for Optimization
- Website Development

John Bradshaw

Setbacks

- The prototype will only handle small amounts of data.
- The database is **locally** run; it may run out space before a certain time duration.
- Mimicking real-life user data to train and test algorithm.
- The energy requirement to keep the RFID and the board running in parallel has not yet been determined.