



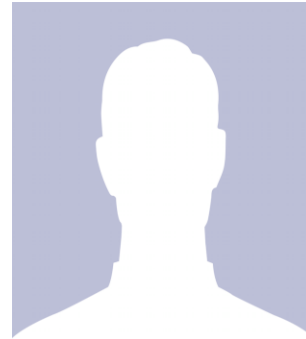
A/C Preference Troubleshooting Device

2-Apr-20

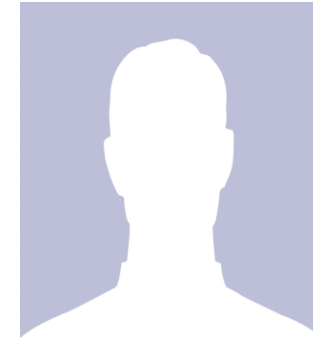
Team Introductions



John Bradshaw
Team Leader



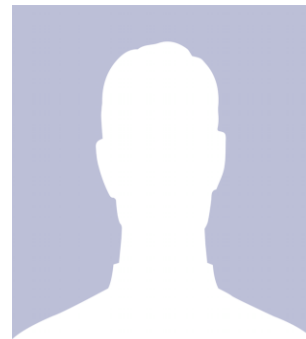
Edine Landoure
Design Engineer



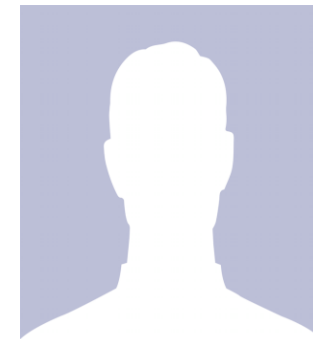
Woodley Fevrius
Systems Engineer



Darryl Brooks
Tech Lead



Curtis Rahman
Software Engineer



Manuel Urbina
Programmer Specialist

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



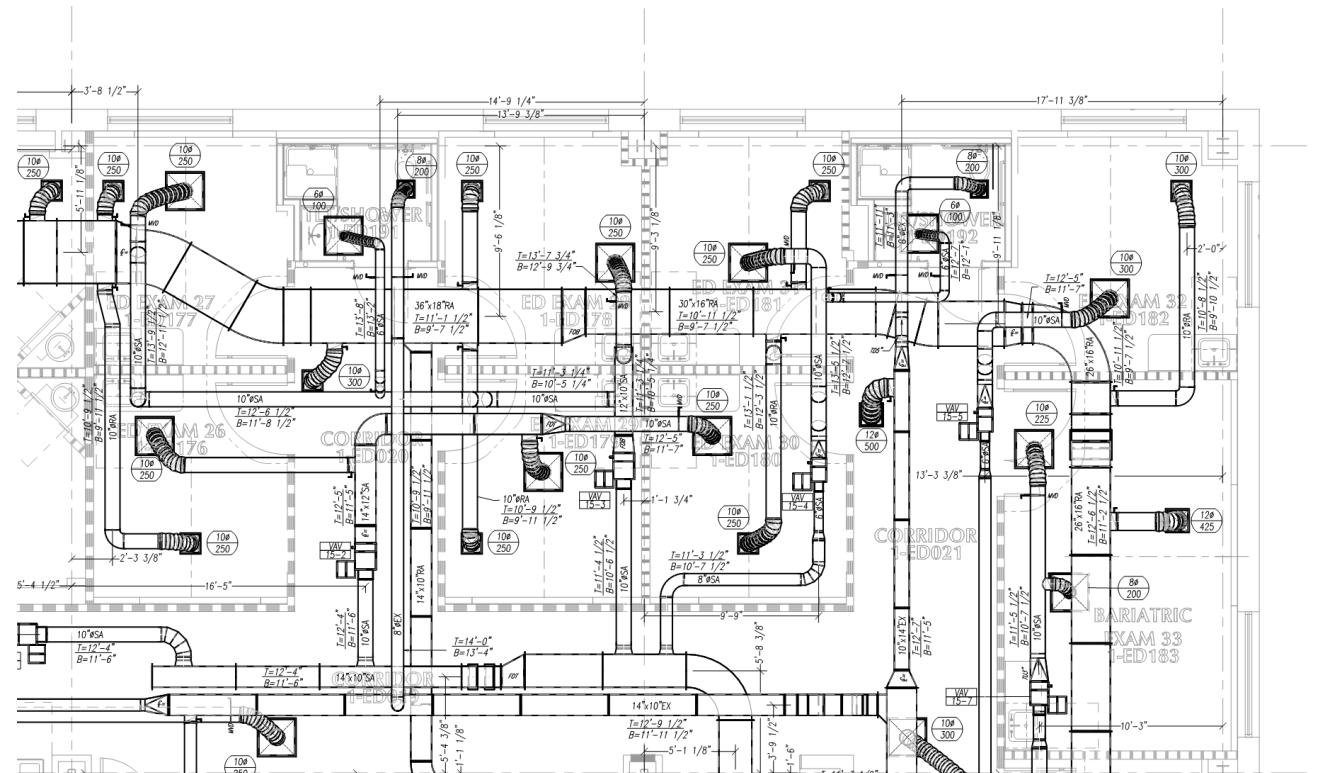
ECE Advisor
Dr. Jerris Hooker

Introduction

- It is currently extremely difficult to change the thermostat of the rooms at the FAMU-FSU College of Engineering
- In a lot public buildings, multiple users may occupy the same office at different times with different temperature preferences
- Currently, there are no devices that take in multiple user inputs

Summary of Project Brief

- Design a control device that caters to multiple user preferences
- Device will take inputs from users and compute their ideal temperatures
- Get to a point where user will not have to input any data



WoodleyFevrius

Background of an A/C

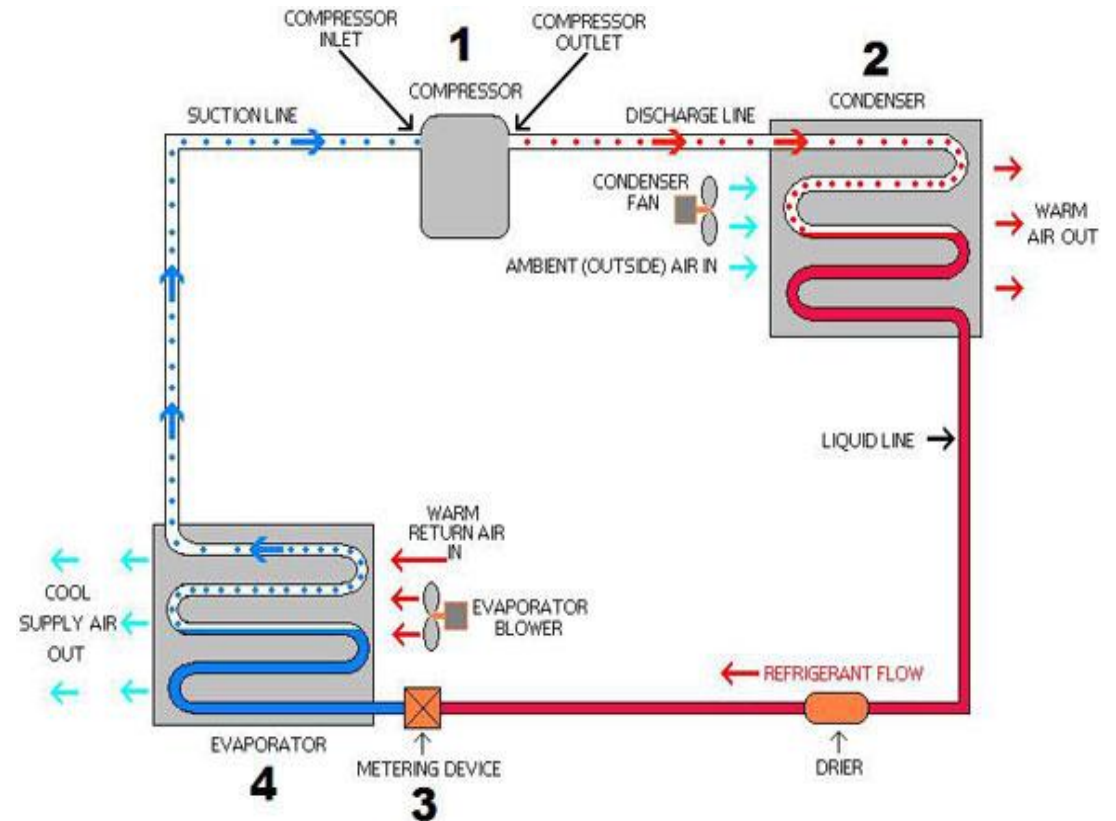
- A/C has roots in second century china where an inventor named Ding Huane crafted a manually powered rotary fan (Varrassi,2011).
- The first modern air conditioner invented in 1902 by engineer Willis Haviland Carrier in Brooklyn,NY (Varrassi,2011)
- Named among the 10 greatest mechanical engineering of the 20th century, according to a survey of ASME members (Varrassi,2011).



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How an A/C Works?

- Cooling in traditional A/C systems is accomplished using the vapor-compression cycle.
- The air conditioner in a central heating and cooling system provides cool air through ductwork inside your home, by providing a process that draws out the warm air inside, removing its heat. (Trane,2019)

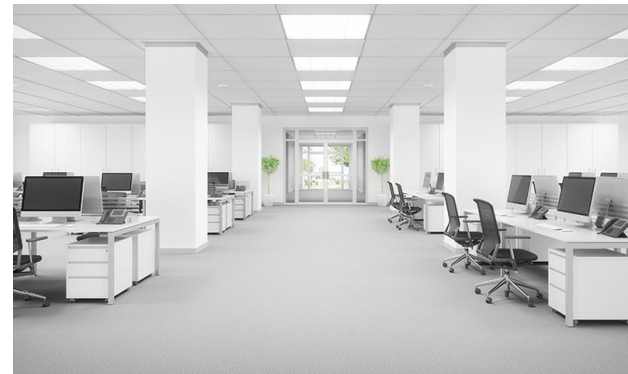
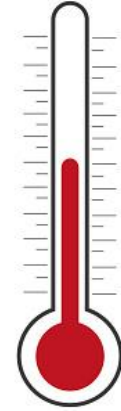


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Project Scope

Key Goals

- 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



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Markets

Primary

- Businesses
- Schools
- Hospitals



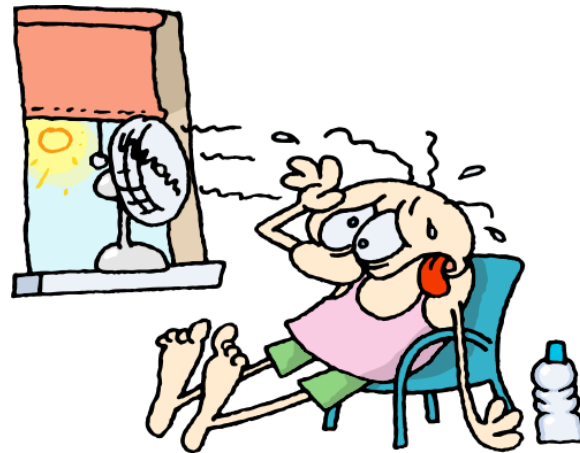
Secondary Markets

- Residential Housing



Assumptions

- All controlled points are assumed to work
- Existing wires is expected to be operational
- No modifications will need to be made to existing air handler equipment or duct work.



Darryl Brooks

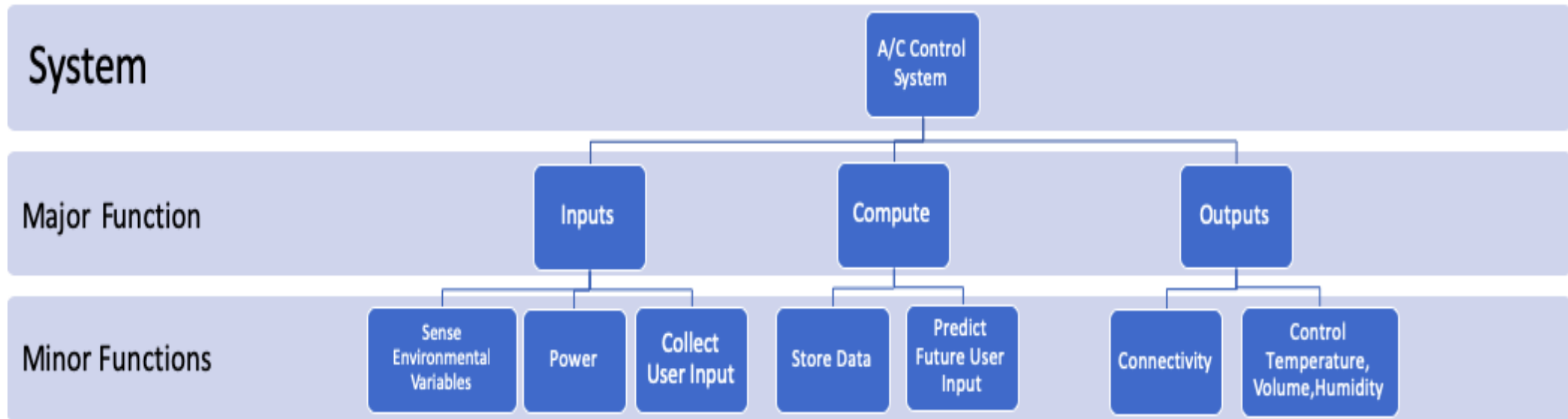
Customer Needs



- Allow everyone to have their satisfying temperature and air flow.
- To cut out the need for maintenance
- Keep the overall system in place just improve the possibility for everyone to set their preferences
- Allow customers to directly regulate their own temperature.
- Create a device to control the temperature for better comfort
- Allow multiple people to set up their temperature preferences.
- Redistribute to everyone their freedom of choice about the temperature.
- Allow users to manage their own room temperature
- Use an algorithm to determine what times the user is too hot or too cold. From there the unit will autonomously control the room temperature
- Product to be modular for different systems.

Darryl Brooks

Functional Decomposition



Five Most Important Points

1. Personalized temperature in individual rooms is not an option.
2. In order to change the room temperature user must go through a process to have it changed.
3. Due to variants such age, sex, and medical conditions it is too difficult to achieve an optimal temperature.
4. The product should adapt to the user's temperature preference to allow comfortability.
5. Having a product that is modular for multiple systems will make it more marketable.

References

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- Varrasi, J. (2011, June 6). *Global Cooling: The History of Air Conditioning*. Retrieved from ASME The American Society of Mechanical Engineers: <https://www.asme.org/topics-resources/content/global-cooling-the-history-of-air-conditioning>