The System Design this semester focused primarily on completing the mechanical aspects of the device (e.g., gantry wheel). The SolidWorks Model from the summer was used as a starting point, but the design was extensively modified and further finished this semester. Additionally, a system overview was developed to show and clarify the dependencies of all the subsystems of the device.

**Customer Requirements**

- System should be usable multiple times a day without lag time
- Design should be able to include better components if desired
- The resolution should be 100 microns or better
- The system should have a positioning system for the animal bed
- The system should be able to check vital signs multiple times per day
- The system should be usable multiple times a day without lag time
- The system should be easy to clean

**System Requirements**

- The system should be as cost-effective as possible
- The design should incorporate shielding so the user is not at risk

**Major Design Aspects**

- CT and radiation systems located on the main gantry wheel
- Total weight of CT system estimated at 2250 lbs
- PET system is mounted on the opposite side of the gantry wheel
- Animal bed translates between both CT and PET regions
- 150 cm inner diameter for optimal imaging distances
- Support rods and animal bed constructed from 3-6 Steel CAST 
- Anti-radiation steel enclosure
- Can choose any combination of systems
- Heavy casters and adjustable leveling mounts for travel and permanent placement
- Plenty of space for customizing parts selection
- Plastic cover for aesthetic optimization

**Customer Requirements (cont.)**

- An open-source initiative as part of the WID/MIR collaboration
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**References**

-References

**Acknowledgements**

Special thanks to Surendra Prajapati for his assistance on the project; to Dr. Thomas Yen for his advice; and to Dr. Rock Mackie for his guidance.