CS539 - Embodied AI
Paper Review - Habitat: A Platform for Embodied AI Research

- **Summary:**
  - The paper essentially talks about creation of a new unified platform to help aid consistent evaluation of metrics and tasks across datasets.
  Currently the 3d simulator environments, tasks and agents are tweaked specifically to the trained dataset or task that they don't end up generalizing well when tested on other datasets. This new platform provides considerable performance improvements over its current counter parts, enabling faster training, the simulator environment and API's have all been made modular to aid in having a common platform.
  - Paper also makes the contribution of making comparison between classic SLAM based approach vs Leaning based approach for the task of Goal Navigation, proving learning based methods can outperform classic methods but when trained for significantly larger time. (5M->75M steps)
  - Paper also conducts cross-dataset generalization experiments to show degree of generalization of their trained agent

- **Strengths:**
  - The paper has been written well, all the experiments have been documented with analysis that is easy to understand and agrees with their hypothesis
  - The provision of the unified platform would aid in the development and conducting of experiments within the Embodied AI field
  - The results implied knowledge of depth was critical for the task of navigation, convincing evidence and experiments were documented

- **Weaknesses:**
  - Better/more learning algorithm comparisons

- **Reflections:**
  - RBG input without a semantic understanding of what a floor is, would just imply that as noise, I'd think providing semantic understanding of the scene as an input and also adding this as an auxilliary loss could help improve performance
  - Most of the novelty in the paper is about the unified platform

- **Most interesting thought**:
  - The future direction of research from the paper is interesting, that they would like to use this platform to test and simulate more tasks rather than just goal navigation, the performance boost to training models is impressive