Reviewers Response document

Reviewers criticism	Response
Contributions are not clear: **R1:** When you say synthesizing the current scenario, I think you mean providing a better understanding of the status quo of how AirBNB hosts are currently using smart home IoT. Design recommendations can be a contribution, but I would tone down the claim of recommendations for lawmakers and policy. The third bullet point doesn't sound like a research contribution. **R2:** The contributions are too lengthy. These should be simple, straightforward points so the reader can easily understand the outcomes of the research and reference later. These should only be the main outcomes that matter the most, not everything. The second contribution presents a new concept (government and policy level) that was not introduced beforehand (nor is it used until the conclusion of the paper), which makes the contribution seem like it was not considered well. Describe the concepts beforehand, in the main body of the introduction, so the contributions can be simplified and feel more fitting. (i.e. "Provide recommendations for lawmakers on privacy and security issues to help users feel more at ease", "Provide recommendations to improve access-control for future technologies.") **R3:** While the introduction describes the current problems with IoT device sharing, with suitable research questions, the contributions are extremely wide in scope and should be narrowed down. While a synthesis of the current state of perspectives with regard to IoT device sharing is feasible, providing both recommendations for policy makers and device developers seems far beyond the	We wholeheartedly agree with the reviewers that our contributions might have been bit confusing. We have fixed that in this draft by making it clear and concise.

scope of an exploratory study like this one.	
Lit review does not provide takeaway & mainly reference reports & need to be contextualized: **R1:** You seem to draw too much from tech industry reports than academic research. This is a research paper. You need to primarily focus on peer-reviewed research when motivating your research. Avoid Editorialized Narratives, Fear-baiting, and deficit-based framing: **R1:** While you summarize some related work, you don't do a good job of helping the reader understand what this related work has to do with the current research. You summarize a lot of papers that don't seem relevant to your research topic. The Sharing Economy and AirBNB: In this sub-section, you should synthesize the research that has been done at the intersection of the sharing economy and AirBNB. Basically, show that most of the research in this area has been on the phenomenon itself, not in the use of smart home use. Smart Home Access Control and Privacy: In this sub-section, summarize the related research on smart home access control and privacy. Basically, point out that most of this work has focused on access control within families in the home and within trusted connections. Smart Home for AirBNB: Cite any research that has done research at the intersection of Smart Home and AirBNB. Show how your work builds upon this research and extends it. **R2:** The literature review does a good job at reviewing what was done, but doesn't give	While we agree that putting in Microsoft research in few places might have been confusing for few. But rest assured they are peer reviewed paper. We changed it to use the author's name in this draft. We have contextualize each of the relevant work in this draft and mentioned why it is important to mention this exact piece of work. We have further removed all off-topic research work cited before to make the whole related work section more engaging. We have added key takeaways for each of the subsections and sub-subsections in related work and how our research differs from these group of research.

the takeaways from each of the three sections. This is what it means for the lit review to be author-centric and not concept-centric (it should be concept-centric instead). List particular studies as examples to help get the main point across, but state the main points, too. Also, after each section, mention why the findings of this area of research is relevant to your research and why it matters. Also, at the end of the lit review, 1) describe the takeaways as a whole, 2) describe what is different/novel about your research, and 3) list your novel contributions.

R3:

The section on Smart-Home access control is detailed but scattered among the various problems like security risks from rushed development on devices, laws made that curb the use of smart devices, and so on. It would be better to focus this section on the core issue specific to this study: that IoT devices are not user centered.

• The section on security and privacy in a closed circle doesn't seem necessary as the paper is primarily concerned with the security of IoT devices between conflicting parties, like property owners and property guests/renters.

Revise the Related Work section to focus the background of the problem more specifically to your research questions. Covering a fair amount of literature is good for providing a wider understanding of the issue but causes the relation to the research to lose focus.

Feasibility & participants: **R1:** I don't think it will be feasible or useful to conduct this study with both AirBNB hosts and guests. I strongly suggest that you focus only on AirBND hosts who use smart home IoT on their properties. I also suggest that you only do a short pre-screening survey (5 min) followed by a 30 minute phone interview.	We agree that we hoped very high to conduct the study among hosts and guests and it would not be possible to be completed within time. So, we have focused our study on Airbnb hosts who use smart home devices on their home. We have also shortened pre-screening survey questionnaire to 7 questions so that participants do not need much time to complete the survey. After

Reorgization:
R1:
Methods: I strongly suggest that you frame this only as an interview study with a brief pre-screening survey and ONLY interview 10 hosts who currently use smart home IoT. Participant Recruitment: Put your selection criteria upfront before you describe your recruitment strategies.Study Design: I don't think you can reasonably ask someone to do a 52-question survey and an interview for a $10 incentive. Also, do you plan to pay this incentive out-of-pocket? I suggest you do a brief pre-screen survey to see if they use one or more smart home IoT devices in their AirBNB property and which ones. Then invite them to participate in the semi-interview. Therefore, your methods should focus more on the interview questions than the survey questions.
Data Analysis Approach: This is fine for now, but the details will need to be hashed out in more detail by your second draft

Your feasibility plan does not give actual deadlines. It needs to.
R3:
The survey section needs to be expanded to explain the purposes of conducting it, the insights the authors hope to obtain, and at least a rough description of the types of questions that will be asked. Simply appending the survey to the end of the paper is not enough, as it would take much more effort for the reader to understand the survey's purpose. While a description of the questions asked during the interview is helpful, organizing them into point form would make them much more readable.

R3:
The feasibility timeline needs to be improved to a more specific level of detail, including

survey, we will select subset of participants for interviews and ask open ended questions to know about more detail of using smart home devices. Pre-screening survey questions are closed ended. We have also described purposes of the study methods and reasons for choosing those in corresponding sections. We have presented details of interview method in "Follow-up interview" paragraph. Reviewers to-the point feedback have helped us to organize and present our content better.

We appreciate that reviewer also pointed out a condition for potential roadblock while inviting hosts for survey. Two researchers will invite hosts for the study. As maximum limit for sending email per person is 500 (according to the information provided by the reviewer) and we aim at interviewing 10 Airbnb hosts finally, we are hopeful that we can collect enough responses within this limit. We can also send email after 24 hours if somehow email ids get flagged.

proposed dates, time for submission of IRB protocol, and not just estimated timespans.

Revise the Methods section to more clearly describe the survey and interview process, and format accordingly to ensure easier readability
Improve the feasibility timeline with proposed dates for project execution and
completion of data collection/analysis.

R4:

The one worry that I had regarding feasibility is that the schedule calls for analyzing all the data and
forming conclusions within five days. During that time, it calls for the researchers to code 30 surveys
containing 8 long answer questions, transcribe and code up to a maximum of 5 hours of audio and then
draw analyze that data to draw meaningful conclusions. I'll freely admit that I'm not an expert at coding
participant responses but from my reading [1,2] I believe that it takes 4-6 hours to transcribe and code
each hour of audio which would result in 20-30 hours spent on the interviews alone. It's possible that
the interviews will fall well short of the 30-minute maximum which would greatly reduce this estimate
but as a worst case scenario I feel that preparing the data should have at least a week scheduled with a
second week for analyzing it and drawing conclusions.

R5:
Be cautious about sending bulk emails. Sending out 150+ emails within a short time period could get them immediately flagged as spam. There was no mention of avoiding this or working around it in the paper so it is unclear if the authors have thought about this

potential road block. Be aware of the specific limits of your email provider to reduce the likelihood of being flagged as spam. One example of limits is Google: https://support.google.com/mail/answer/22839?hl=en A couple of sites that provide info on how to avoid being flagged as spam when sending There is no mention that the survey to be used is attached at the bottom of the paper. Without the survey, the paper is within the page limit, but the survey adds on 7 additional pages that should probably be noted as an appendix section. The paragraph that talks about it should call out the appendix with something similar to the following, "See Appendix A for the full survey." There appears to be a dot leading the subtitle of the figure. It seems out of place and doesn't add anything to the figure description. I'd recommend removal of this dot. My only concern with the feasibility is that it may take longer than anticipated to receive responses back from the email to invites. If there are too few responses, there is no backup plan laid out for how to get an appropriate number of pariticpants.	
Scoping topic: Research area is too broad R1: Your research is on Smart Home IoT usage for AirBNB. Therefore, you need to contextualize your entire paper to this specific topic. You should not be talking about the ubiquity of the internet or IoT security and adoption in general. Using this level of scoping is too broad and not directly related to your paper. It is unnecessary filler.	Agreeing with this comment, We have toned down our related work section to include only the related ones.
Going too deep in introduction: R1: You start going too much in the weeds in your	We have thus removed literature reviews from the introduction section and clearly defined our research problem and RQs.

introduction by starting your literature review too early. The introduction should 1) motivate the importance of the topic, 2) clearly define your research problem, 3) define your overarching research questions, 4) explain how you answer those research questions, and 5) summarize your key findings and contributions. As a result, your introduction is a little too long. RQs should be in the second column on the first page

R2:

Why is there "...a growing sense of fear for the loss of information and physical privacy among..." smart home users? These isn't entirely intuitive, and a brief explanation of this would be helpful for the reader (saving them from reading the associated source).Overall, the introduction is quite lengthy, given the size of the paper as a whole. It also gives more examples than is needed to present the concept to the reader, and feels as if it were written to take up more space on the paper.

R3:

The introduction does a good job of defining the problem space from multiple perspectives, but the various concepts like Shared Economy and IoT devices are explained poorly, or not at all in some cases. Some terms are used alternatively, like 'smart home devices' and 'IoT devices', which readers may think are different things Altogether. While the introduction describes the current problems with IoT device sharing, with suitable research questions, the contributions are extremely wide in scope and should be narrowed down. While a synthesis of the current state of perspectives with regard to IoT device sharing is feasible, providing both recommendations for policy makers and device developers seems far beyond the scope of an exploratory study like this one.

Use the beginning of your introduction to explain the terms used in your paper before describing the problem space. This makes

Agreeing with R2, we have removed such claims which does not accompany a explanation and/or citation.

Agreeing with R3, we explained all the concepts mentioned in this paper early.

the explanation of the problem much easier for the reader to comprehend.	
Reframing research questions: **R1:** Research questions should be at the end of the first page. Reframe your questions as follows: RQ1: What smart home devices are AirBNB hosts currently using on their properties and for what purpose? RQ2: What are the benefits and concerns of use for AirBNB smart home hosts? RQ3: What unique needs do AirBNB hosts have for managing and sharing access control to their smart home devices with AirBNB guests?	We changed our current RQs to match this great suggestion by R1.
Writing quality: **R1:** Overall, this draft is very hard-to-follow and the ideas being presented in the paper are disjointed. The sentences don't logically flow with one another, and you do not do a good job of explaining why those sentences matter for your research topic. This paper needs a major reorganization and refocus to make it tell a coherent story. Avoid Editorialized Narratives, Fear-baiting, and deficit-based framing: o Editorializing is stating an opinion as if it were fact without providing a citation to back up your claims. o Fear-baiting is over-problematizing/sensationalizing the topic to invoke fear. For example, don't over state the privacy vulnerabilities of smart home IoT. o Deficit-based framing is where you use the lack of research in an area to motivate the reason for doing the research, rather than the strengths of the research itself. R2: The paper has many grammatical and syntax	Agreeing with R1, we have tried our best to make this draft more readable to create a cogent story so that it becomes easy to follow. To the best of our knowledge, all other mistakes like Editorialized Narratives, Fear-baiting, and deficit-based framing have been avoided in this draft. We had checked our draft through online tools like grammerly to make sure that there are no grammatical mistakes left in this draft. Hopefully this time we will get it right.

errors and incomplete sentences throughout, making reading somewhat taxing (Abstract: "As they are sharing..."; Introduction, Paragraph
5: "Where to give someone else access"; Related Work, Paragraph 1: "Which is causing those
...", etc.)

R3:
I highly recommend making several writing passes of this paper, as there are numerous grammatical and formatting errors, including faults with sentence structure, capitalization, and spelling.

R4:
The paper seemed well thought out and structured but has a very large number of grammatical errors to
the point where I had to reread some sentences to try and understand their meaning from the context.
I've included several of these sentences below with the sections they came from in parentheses.

We will conduct interview with 10 guests and owners of such property to understand present situation and demand of both the owners and the guests of these houses with smart home devices (Abstract)
It is true for the other way also (Introduction)
We will begin by exploring the situations which have encouraged participants to share smart home IoT devices with almost stranger people and further granular access control and form of access control mechanisms -
they want to possess in the future (Result)
There were also many instances of inconsistent pluralization, missing or incorrect punctuation and odd sentence structure. For example, the Smart-Home access control section opens with the sentence "Smart devices have so many use cases that it should have been already in each and every household by now". The sentence shows

both inconsistent pluralization and odd sentence structure.	
Paper title **R1:** Your paper needs a real title. **R2:** The title should be something interesting, and not just stating the name of the assignment, but describing the research itself (i.e. "Perceptions on and Improving the Sharing of Smart Home Devices Outside of the Home").	Agreeing with R1 and R2, we have assigned a title for our project. Hopefully, it is an apt one.
Going deep in introduction: **R1:** You start going too much in the weeds in your introduction by starting your literature review too early. The introduction should 1) motivate the importance of the topic, 2) clearly define your research problem, 3) define your over-arching research questions, 4) explain how you answer those research questions, and 5) summarize your key findings and contributions. As a result, your introduction is a little too long. RQs should be in the second column on the first page. First Paragraph: [Introduce sharing economy and prevalence of AirBNB] [Explain the problem of granting strangers access to your property] [Transition into the use of Smart home IoT being one way to help alleviate this problem.] Second Paragraph: [Introduce the prevalence of Smart Home IoT and what it is] [Introduce this as an interesting case study on privacy/access control as most prior work has focused on access control sharing within families in the home or with trusted individuals] [Introduce your research questions] Third Paragraph: Describe your methods to answer your research questions.	Agreeing with R1, we have made our Introduction section much more to the point and avoided misdirected sentences. I am happy to say that, the RQs are exactly where R1 wanted them to be.

Clarifications in method

R2:
Stating, "We will recruit...from different states of the country," does this mean you will recruit participants who are sharing smart home devices across different states (i.e. Jane from
Florida is sharing her devices with John from Kansas), or does it just mean that participants will be recruited from around the country? More clarity would be helpful here.
Why are you conducting online surveys and interviews? Justify your reasoning for choosing
these methods as opposed to some other methods.
In the Recruitment subsection, it states, "Hopefully, we will be able to find..." Avoid using
words like "hopefully", since these give off a sense of a lack of confidence. These can be rephrased to sound more confident without overpromising (i.e. "We plan to recruit at least 15 hosts..."). The same goes for the Ethics subsection ("We hope...") and Feasibility Analysis subsection ("In the meantime, hopefully..."). As survey of 52 questions appears to be quite large to only take 15 minutes at most. Perhaps
describe how you calculated the length of the survey, whether that is gathering an average through pilot tests or simply estimating based on the complexity of the questions. Some justification here would be helpful.Regarding the follow-up interview, why were interviews over the phone chosen instead of in-person? How and when will the gift cards be sent to participants (i.e. sent via email, mailed to physical address, sent after the phone interview, etc.)? Acronyms should be defined before their use, unless they are common knowledge within the discipline. Earlier in the paper, perhaps use the term like so: "sharing economy (SE)". Then, feel free to use SE at any time afterward.

Agreeing with R2, we have clarified why we are using the methods that we are using. We also tried to justify why we chose to do this study among US households.

Also, we removed all the pessimistic words from this draft and replaced with optimistic ones.

Agreeing with R2, We have toned down our survey and interview questions. It is attached with this draft for the reviewers to see.
We calculated the length of our survey by doing it ourselves. It never took us more than a minute. But we are mentioning that it would take at most 5 minutes.
As the AirBnB hosts are scattered all over the US, it would be physically and financially infeasible to do the interviews in person. Also, doing this would not change the kind of data that we are looking for.

Minor issues: **R1:** Instead of "other researchers," use Last name et al. to give people credit for their work. - After a main section heading you should include signposts, which give an indication of the content that will be presented in the following sub-sections. - Get rid of beginning sentences that start with "Recent research . . ." Instead, just state the findings as fact with a citation. The citation implies it was research. - Your paper should be anonymized. Remove any mention of UCF and Orlando. - Don't write "we hope," it makes your proposal sound too tentative. Write only what you will actually do and make it so. **R5:** The survey has a difficult to follow numbering system. I understand that several questions were omitted as they are similar to other questions being shown, however it is difficult to understand why it jumps from Q22.10 to Q52.11. The survey has some random blue circles with Xs in them. There is no explanation as to what these are or why they are there. Since it only appears on some of the answers, it could bias the users into thinking that is the correct answer.Additional notes to authors: It can be helpful to know that there is a way to group multiple citations together in the text. In LaTeX, you can use \cite{paper1, paper2, etc.}. This will produce formatting that looks like this: [1, 2]. When there are multiple consecutive papers, it will look like this: [1-5].	We have thus changed all of our citation to follow the suggested style. We have also anonymized our draft as suggested by R1. Agreeing with R5, we have simplified our survey. Hopefully it would be easy to follow this time around. We have also removed confusing signs in the survey as suggested by R5.
Abstract/using jargons: **R2:** The opening sentence is a bit abstract, making it difficult for the visual reader understand the statement. Perhaps save the term "sharing economy" for later, to be used and defined in the introduction, and give an example and	Agreeing with R2, we have explained all the jargon used in the paper upfront to ease the reader into reading our paper.

describe what is meant by this "sharing economy"
instead (i.e. "As the internet becomes more ubiquitous, more and more people are using technology to share more of their lives with others...such as checking to restaurants in on social media, sharing their location with friends and family..."). This way the abstract isn't
cluttered with definitions and don't confuse readers with potentially unfamiliar terms. Stating "...there is a lack of understanding..." is not sufficient for motivating the research topic. Perhaps instead describe why there needs to be understanding in this area (i.e. "Understanding what kind of access control is needed in this kind of setting will lead to improved privacy and security...").

R5:
Keep in mind that the abstract is the most read piece of the paper and it is read by people of various backgrounds and disciplines. If jargon is used within the abstract, it should be clearly defined there as well. More specifically, "Sharing Economy" would be considered jargon, as it is not a common term across all disciplines. In fact, it is a term to which I was unfamiliar and I had to look it up to fully understand what the paper is About.Keep in mind that not every reader has the same background as the authors, so jargon should be defined when first used to clarify its meaning, especially when it comes to acronyms. The paper uses "IoT" repeatedly, but never defines it as "Internet of Things". It is possible that "IoT" stands for the "Indiana Office of Technology" (https://www.in.gov/iot/) . The first time the shorthand version is used, it should be defined so that those that read the paper and do not already know what it means don't have to go look it up somewhere to understand what the paper is telling them. There are two ways that come to mind for which this can be accomplished. It can be worded as, "... Internet of Things (IoT)..." or as, "... the Internet of Things or IoT...".

Motivating research topic: **R2:** Stating "...there is a lack of understanding..." is not sufficient for motivating the research topic. Perhaps instead describe why there needs to be understanding in this area (i.e. "Understanding what kind of access control is needed in this kind of setting will lead to improved privacy and security..."). **R4:** I had a problem understanding the motivation of the paper. It states that there are two issues that it will address: the worries of the property owners and the worries of the guests. Regarding the first issue, it says that property owners are worried about a loss of information and physical privacy. This sentence is vague and no additional information is shared in the following section. An example that immediately springs to mind is that one of the devices that the property owner is worried about sharing is a smart lock because a guest might retain access rights to the lock after they have checked out but in this case it seems like it would be easy to reset the device with a different password after the guest has left. If this is the case it doesn't help prove that research is needed to solve the problem because there is a simple if inconvenient solution to the problem. It might help to add an example showing the type of issues that property owners might face with such smart devices and a concrete example of how the existing architecture is lacking. For the second issue it states that guests are also worried about their data being misused. Once again, this is a vague statement and an immediate example would have been helpful. There is an example two paragraphs down but it's not very compelling. The example discusses a camera outside a room that a	Agreeing with R2 and R4, we have added further reasoning on why we should be doing this research. We tried our best to avoid any deficit based framing throughout our draft.

guest might not be comfortable with. I'm not sure if the camera is meantto be something like an exterior security camera covering a public area or a camera covering an interior area that is part of the guest's rental area. In the first case I'm not sure why the guest would have a problem with the camera at all and in the second case the owner presumably put the camera there to keep an eye on the guest and that's more a case of what the guest is willing to endure. In either case I don't see a case for a more nuanced form of access control. To address the problems with the motivation I suggest including detailed examples of how both the owners and guests of the sharing economy would benefit from using smart devices and how existing smart devices fail to meet their needs.	