# IRB Application / Protocol

*For exempt category 3 research*

**Please complete this application as thoroughly as possible.**

Additional information and templates are available at [Office of Research Integrity and Compliance](http://www.cmu.edu/research-compliance/human-subjects-research/)

\*Note that incomplete applications will result in delays.

**Protocol Number:**

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| STUDY2019\_00000272 |

**Study Title:**

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| Improving Transparency and Understandability of Automated Planning |

**PI Name:**

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| Roykrong Sukkerd |

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| 1. Exempt Category 3 Eligibility |

Studies that qualify for this exemption involve benign behavioral interventions in conjunction with the collection of information from adult subjects who have prospectively agreed to the intervention (consent). If the study involves deception the subjects must prospectively agree to the deception. Benign behavioral interventions are brief in duration, harmless, painless, not physically invasive, not likely to have a significant adverse lasting impact on the subjects, and there is no reason to think the subjects will find the interventions offensive or embarrassing.

Examples of benign behavioral interventions would include having the subjects play an online game, having them solve puzzles under various noise conditions, or having them decide how to allocate a nominal amount of received cash between themselves and someone else.

1. **Are all subject adults?**

**If the answer to question a. is ‘No’, do not proceed with this exemption.  
Return to SPARCS to the Review Type Requested page to change to a Non-Exempt application.**

1. **Will all subjects prospectively agree to the intervention?**

**If the answer to question b. is ‘No’, do not proceed with this exemption.  
Return to SPARCS to the Review Type Requested page to change to a Non-Exempt application.**

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| 2. Study Scope |

1. **What is the purpose of the study (what is your research question) and how will the data collected be used?**

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| This study will examine ways to improve transparency and understandability of automated planning. The study will evaluate the effectiveness of our proposed approach to enable AI planning agent to verbally and visually explain its behavior to human users. We will use cognitive tests deployed on a crowd-sourcing platform as a method for this study. The collected data will be used solely for the purpose of validating the effectiveness of our proposed automated explanation algorithm. |

1. **For each activity/participant population, describe the research procedures. (For this exemption the benign behavioral interventions must be brief in duration, harmless, painless, not physically invasive, not likely to have a significant adverse lasting impact on the subjects, and the investigator has no reason to think the subjects will find the**

**interventions offensive or embarrassing.)**

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| We will use cognitive tests deployed on a crowd-sourcing platform as a method for this study. Each participant will receive a set of cognitive tests that require an understanding of an AI planning agent’s behavior and rationale to perform well on the tests. Participants in the control group will not receive any intervention. Participants in the experimental group will be presented with a written-verbal and visual explanation from the AI agent about its behavior and rationale. The test scores of all participants will be collected. The problem domains used for the cognitive tests will be non-harmful and non-controversial, such as mobile robot navigation, resource scheduling, etc. |

1. **For each activity/participant population, indicate the location(s). Specify whether the participant will be engaged in person, remotely via the internet, etc.:**

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| Participants will engage in the study via internet, through a crowd-sourcing platform, such as Amazon Mechanical Turk. |

1. **For each activity/participant population, describe the time required of the participant:**

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| The time required for each participant to complete the cognitive tests is approximately 15 minutes. |

1. **Who will be asked to participate?**

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| Adults of 18 years or older, who are proficient in English. |

1. **Will questionnaires or surveys be used?**

**If yes, please upload them in Supporting Documents**

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| 3. Participation Information |

1. **What is the age range of participants in the proposed study?**

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| 18 years and older |

1. **How many participants are needed for the study?**

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| Approximately 100 participants |

1. **How was that number determined?**

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| The number was determined based on the number of our designed cognitive-like tests, and statistical power. |

1. **Please list inclusion and exclusion criteria:**

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| Inclusion: Amazon Mechanical Turk workers who have HIT approval rate of 95% or greater. |

1. **What do you estimate the ratio of males to females to be?**

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| 50-50 |

1. **Will this be reflective of the local population?**

**If not, please explain:**

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| 4. Recruitment |

1. **Describe how participant recruitment will be performed:**

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| Participant recruitment will be done via an online crowd-source platform, such as Amazon Mechanical Turk. |

1. **Indicate how and by whom potential participants are introduced to the study:**

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| Potential participants will be introduced to the study by our written and visual introduction and instruction, placed on the online crowd-source platform that we will use for the study. |

1. **Check all boxes below that apply and attach documentation:**

Flyers? Where will they be posted?

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Radio, TV?

E-Mail? Indicate how the email addresses are obtained:

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Web-based?

Participant Pool? Which one?

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Other? Describe:

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1. **Will participants undergo screening prior to their participation?**

**If yes, please describe:**

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**Please upload all recruiting and screening materials in Supporting Documents**

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| 5. Consent |

**Describe the process for providing subjects with information about participation and confirming their willingness to participate:**

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| We will use an online consent form, following the template of online consent form provided by the CMU IRB. Each participant on the crowd-sourcing platform that we use will be asked to give consent to the study before proceeding to the study. |

**Please attach any documents related to subject participation and consent. (Examples include a script to be used to explain the study verbally, an information sheet to be given to subjects, an online consent page, a description of an MTurk HIT, etc.) These documents should be uploaded in the Category 3 Eligibility smartform under question 5.**

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| 6. Risk and Benefits |

1. **Will participants receive a direct benefit from the study?**

**If yes, describe the expected direct benefits to participants:**

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| Each participant will receive a compensation of approximately $15/hour. |

1. **Indicate the expected indirect benefits to participants:**

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| The knowledge received from the study may be of value to humanity. |

1. **Indicate the potential risks to participants:**

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| There is no potential risk to participants. |

1. **Indicate how all potential risks will be managed and/or minimized:**

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| There is no potential risk to participants. |

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| 7. Deception |

*Deception is only possible in minimal risk studies. Investigators need to explain why the deception is necessary to achieve the study goals and how the degree of deception is kept to a minimum. The degree of deception means, for example, withholding part of the study’s purpose as opposed to stating a false study purpose. Subjects should be debriefed as early as is feasible. If the research involves deceiving the subjects regarding the nature or purposes of the research, this exemption is not applicable unless the subject authorizes the deception through a prospective agreement to participate in research in circumstances in which the subject is informed that he or she will be unaware of or misled regarding the nature or purposes of the research.*

1. **Will deception be used?**

**If no, proceed to the next section.**

**If yes, please explain:**

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**If yes, please include a justification as to why deception is necessary:**

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1. **Indicate how you will insure that the subjects authorize the deception through a prospective agreement to participate in research in circumstances in which the subject is informed that he or she will be unaware of or misled regarding the nature or purposes of the research:**

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1. **Describe how participants will be debriefed:**

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**Please upload the de-briefing material and/or script in Supporting Documents**

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| 8. Compensation |

1. **Are participants to be compensated for the study?**

**If yes, what is the amount of compensation:**

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| Approximately $15/hour |

**If yes, what is the source of the compensation:**

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| Project funding of this study |

**If yes, what is the type of compensation (eg, gift card, cash):**

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| Payment through Amazon Mechanical Turk payment platform |

1. **Will participants receive any non-monetary compensation?**

**If yes, please describe:**

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1. **Are there any costs to participants?**

**If yes, please describe:**

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1. **Will participants who are students be offered class credit?**

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| 9. Data Security and Confidentiality |

1. **Will personal identifiers be obtained?**

**If yes, provide a complete list of identifiers:**

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1. **Describe your procedure for coding your data (encoding):**

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| No personally identifiable information will be collected from the participants. We only collect test scores of the participants on our designed cognitive-like tests. |

1. **Will audio recordings be made?**

**If yes, please describe how this will be done and who will have access to the recordings:**

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1. **Will video recordings be made?**

**If yes, please describe how this will be done and who will have access to the recordings:**

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1. **Do you intend to obtain a certificate of confidentiality from NIH?**

1. **In addition to the individuals listed on the study personnel page, who will have access to research data (e.g. surveys, questionnaires, recordings, interview records, etc.)? Include a comprehensive list and indicate if information may be shared outside the research team and/or CMU.**

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| None |

1. **Describe how you will protect participant confidentiality and secure research records (e.g. password protected, encrypted, etc.). Include location of where the data will be stored. If the PI should leave the university indicate your plan for the storage of research information and who will be responsible for oversight.**

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| Data collected from the participants will not contain any personally identifiable information. The collected data will be stored on a private CMU server of our research group. |

1. **Describe your process for overseeing your study.   Include a description regarding monitoring of data (to ensure that study goals are met and adherence to the IRB approved protocol is maintained). Examples: Review of lab notebooks, frequency of meetings to review data, who will be present at the meetings, how recruitment and retention will be monitored, etc.:**

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| We will have weekly meetings among the PI and CO-Is to review the study process and data collected. |

1. **Describe your process for ensuring that adverse events, unanticipated problems, and subject complaints are reported to the IRB Office in a timely manner:**

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| The PI will be responsible for reporting any adverse events, unanticipated problems, or subject complaints to the IRB Office as soon as possible if those events shall occur. |

1. **Confirm that all research data will be retained at CMU for a minimum of three (3) years past study completion:**