* **Page 1**
  + Changed the title to *“Ontology-Based State Representations for Intention Recognition in Collaborative Human-Robot Environments”*
* **Page 3** 
  + Changed “*The core concept is that states tend to be easier to recognize than activities, thus allowing for more accurate input into intention recognition systems.*” to “*In this paper, we describe the state of the art in state vs. activity recognition and show that, although still a very tough problem, the results of state recognition algorithms tend to be much more accurate than those doing activity recognition. Because the intention recognition approaches are only as good as the input that is provided to them, the higher accuracy in state recognition would imply a great accuracy in the intention recognition algorithms that employ them.*”
* **Page 7**
  + Reorganized the order of the bullets to match the order of the RCC8 relations in Figure 1.
  + Added a new figure depicting reference frames in a kitting workstation.
* **Page 8**
  + Reorganized the order of the bullets to match the order of the RCC8 relations in Figure 1.
  + Changed “*We do this using the following Boolean operators”* to *“We do this using the following* ***predicates****”.*
  + Changed *“which intuitively means, in Equation 2, that the edge of the bounding plane of object A is greater than (in the x-dimension in the defined frame of reference) the edge of the bounding plane of object B”* to *“which intuitively means, in Equation 2, that* ***the center of gravity*** *of object A is greater than (in the x-dimension in the defined frame of reference)* ***the center of gravity*** *of object B”.*
* **Page 9**
  + Changed ***“****an object is inside of another object in at least two dimensions but not fully contained in”* to *“an object is fully inside of a second object in two dimensions and partially in the third dimension”.*
  + Changed *“touching at least one side and not contained with (i.e., touching outer edges)”* to *“touching at least one side and not contained* ***within*** *(i.e., touching outer edges)”*
  + Changed *“the edge of the bounding plane of one object is greater (in the z-dimension) than that of a second object”* to *“the z component of the center of gravity of an object is greater than that of a second object and the two objects are overlapping in the x and y dimensions”*
  + Changed *“an object is inside of another object in at least two dimensions and touching the object in at least one dimension”* to *“an object is fully inside of a second object in two dimensions and partially in the third dimension and is touching in at least one dimension”*
* **Page 10**
  + Modified Formula 10
* **Page 11**
  + Modified Formula 13
* **Page 12**
  + Changed *“It is first important to describe what the state information will be used for”* to *“First, it is important to describe what the state information will be used for”*
  + Changed *“Only the objects and state relations that are consider “of interest” are updated in the ontology”* to *“Only the objects and state relations that are considered “of interest” are updated in the ontology”*
* **Page 13**
  + Added *“Though there could be many objects and relations of interest, only a very few of them will change during any individual state, thus the system performance will not be negatively affected even with a large number of objects.”* at the end of the first paragraph.
  + Changed *“with that intention as updated in the ontology”* to *“with that intention* ***are*** *updated in the ontology”*.
* **Page 16**
  + Removed *“SolidObject”* in lines 3 and 5 in table 1.
* **Page 17**
  + Changed *“In addition to representing objects, the ontology also represents activities”* to *“In addition to objects, the ontology also represents activities”*
  + Changed *“To represent activities in the manufacturing kitting ontology, both the actions and the pre- and post-conditions of those actions need to be represented.”* to *“In the manufacturing kitting ontology, both the activities and the pre- and post-conditions of those activities need to be represented.”*
* **Page 18**
  + Added, *“Some of the predicates described above appear to be redundant, such as number 3 and 5 above. Some are exact opposites, such as numbers 1 and 8 above. These are included in this way because of the requirements of a sister project that looking at automated planning and the goal was to leverage the same predicates between the two projects”* at the end of *“Each of these actions has associated preconditions and effects”*.
  + Changed *“on the type of effector that is being used”* to *“on the type of end effector that is being used”*
  + Added new sentence, *“These predicates are not included in Table 3 but instead discussed and elaborated below.”*
* **Page 19**
  + Added the footnote, *“For the purpose of this effort, we will assume that if the end effector is in contact with the robot arm, then it is correctly positioned and attached."* in the second row of table 3.
* **Page 20**
  + Added a footnote *"For this work, we assume that if the kit tray in partially in and in contact with the gripper, it is being held by the gripper."* for the predicate *gripper-holds-kittray(robot ,kittray).*
  + New text added, *"As mentioned earlier, some of the predicates described above are exact opposites. These are included in this way because of the requirements of a sister project that looking at automated planning and the goal was to leverage the same predicates between the two projects.”*
* **Page 21**
  + Removed the negation in Formula 20.
* **Page 22**
  + Changed *Under-And-With-Contact-With* to *Under-And-In-Contact-With*
  + Added *NOT Partially-In-And-In-Contact-With(obj1, eeff)* in formula 24