

## **Answers to leftover chat room questions from *David Smith's Seedling Seminar presentation, February 25, 2014***

George Adams: You mentioned about having the Oracle information from the NextGen project, is that 1 of your goals?

*David Smith: Are you referring to the augmented database of aircraft tracks developed by Bimal Aponso's Phase I project that was described by Michelle Eshow in the talk just preceding mine? Until yesterday, we were not aware of that effort. It is certainly one of our goals to evaluate the techniques we developed in a simulation study. Using their information to populate aircraft in that study would improve the value and realism of the study. I initiated discussion with a member of their team yesterday, and will be looking into using the information they have compiled.*

Maverick: I enjoyed that session a lot. But the program seems to have some problems.

1) I am informatician, so i am not so out of the subject.  
2) i hope i haven't been too annoying.  
3) because of the time zone i leave in, it is not possible for me to stay any longer. even thought i would have enjoyed the subjects very much.

So.

1) i have understood this is an experimental project. not ment for military use or for busy traffic air. but it is thought so.

about the millitary use, you have some problems: a) it would be much more recomended to use a drone instead of a human.  
b) it can be easily tricked. like: the enemy is slowing down like he is landing, but he is fakeing. or he just opens his gears. etc...

and c) the enemy plane is likely to go where ever he wants to. except for mountains. :)

*David Smith:*

*The work we are doing is intended to help UASs sense and avoid other civilian aircraft by using more knowledge to help predict where they are going. In this environment, there is no particular benefit or*

*reason for the other aircraft to engage in deception - they also want to avoid NMACs (Near Mid-Air Collisions). We therefore assume that the other aircraft are either unaware of the UAS, or would act to avoid it if it posed any perceived safety threat. This work is not aimed at military or adversarial situations. In those situations, game-theoretic techniques usually play a role, because the adversary is attempting to thwart or counter any move that is made. This is not the case for the problem we are addressing.*

Maverick: well, talking about that program, doesn't matter about military or non military use, it is, from the info approach, a not so complicated program as presented. the biggest challenge you have to deal with is to find a good way to insert the datas from sensors in the program. the program can even be a simulator, on which you put some Lee, or some lateral crossing, or whatever you like to do on a 3D matrix( vector). you certainly have enormous power for Ram and memory, and the program itself isn't such a challenge. I would like also, if possible, to help at working at this program. It is a very interesting program and with very big potential.

*David Smith: While I agree that a knowledge intensive approach has great potential, I think it is a very challenging problem. The approach I described is attempting to make use of a lot of common-sense information, and do common-sense reasoning. Problems of common-sense reasoning have been studied in the Artificial Intelligence community for 50 years with limited success - it is notoriously hard to represent this kind of qualitative knowledge and do this reasoning. This should not stop us from trying, but it is not easy to get it right.*

Maverick: p.s.: as watching his speech, an question popped in my mind. i couldn't asked it in the session. so. What will you do, when you will launch a rocket? i mean that with this project, at the leaving the atmosphere, the rocket might meet some junks. ( we all know there are thousands of junks out there. ). so with this program, it might signalize the danger. I suppose the rockets already have this

implemented, but i was just asking...

*David Smith: This is outside my area of expertise. I believe that space debris is carefully tracked by the military and space agencies of space-faring countries, and that launch and orbit trajectories are planned to avoid such debris. I am not aware of any attempts to incorporate onboard debris recognition or avoidance technology into spacecraft.*