Second year of Master - Studies Projects and Research

Mobility Models for UAV Group Reconnaissance Applications

MEMORY

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Preface

Les drones sont de plus en plus présents sur le territoire français et partout dans le monde. De nombreuses recherches sont dédiées à ces appareils depuis des années, mais la plus part d'entre elles reposent sur un modèle de mobilité théorique et inadapté aux mouvements aériens réels.

Le but de ce PER est donc d'étudier un modèle qui respecte les propriétés aérodynamiques des drones.

Vous devrez tout d'abord comprendre le modèle de mobilité proposé, extraire les algorithmes correspondants et enfin implémenter ces algorithmes au sein du simulateur JBotSim.
Vous devrez également tester votre implémentation sur un scénario que vous établirez.

Vous pourrez également comparer votre modèle avec ceux des autres groupes sur des scénarios communs.

1 Analysis Of Existing

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10   Development Environment and Conventions

In this part, we will see the development environment we used, and the programming conventions we've applied.

10.1   Development Environment

- GitHub
- ...

10.2   Programming Conventions

First, we've choosed to used the Java Coding Conventions, which we can see in the following link - http://www.oracle.com/technetwork/java/codeconventions-150003.pdf

Then, in order to create our documentation, we've used the Doxygen Convention, viewable here - http://www.stack.nl/ dimitri/doxygen/manual/docblocks.html
We've relied heavily on this documentation and have mostly employed these protocoles below.

Doxygen Convention for classes

```
/**
* @class name of the class
* @brief Description of herself
*/
```

Doxygen Convention for methods

```
/**
* @brief Description of the method
* @param the parameters and their descriptions
* @return the description of what return the method (optional)
*/
```

Doxygen Convention for members

```
int var; /**< Detailed description after the member */
```

We've also resorted to programming conventions that we defined between us.
For example, when a part of a code, was not finished yet, we put the following lines above the concerning part.

Programming convention for unfinished code

```
/**
* @TO_DO
* Description
*/
```

We've also used a convention for the bugs found and wrote these protocoles, depending on whether the bug was resolved or not.
We used it, in line with the Bug Tracking of GitHub.

Programming convention for bugs

```
/**
* @BUG
* @Unfinished/finished
* Description
*/
```

To finish, we've created the five essential files for a project :

- INSTALL.txt : Installation instructions for the project,

- LICENCE.txt : Licence and copyright © of the project,

- README.txt : General description of the project,

- AUTHORS.txt : Authors of the project,

- MANIFEST.txt : Tree structure and files list of the project.

11   Conclusion

References

[1] E. Kuiper and S. Nadjm-Tehrani. *Mobility Models for UAV Group Reconnaissance Applications*. Wireless and Mobile Communications, 2006. ICWMC '06. International Conference on, Bucharest, July 2006.

[2] Arnaud Casteigts. The JBotSim library. *CoRR*, abs/1001.1435, 2013.