

LaTeX Output from IK-BT Package

Blake Hannaford, Dianmu Zhang
University of Washington
July 2017

1 Introduction

The IK-BT package generates a report on your inverse kinematics solution automatically. This produces an output that can be much easier to read and check. The Latex output consists of two parts:

1. `ik_report_template.tex` — the template document containing overall setup and formatting information,
2. `IK_solution_NAME.tex` — the specific solution equations produced for your robot (where `NAME` is your robot's name),
3. `IK_solution.tex` — a copy of the most recently solved `IK_solution_NAME.tex`.

2 How to use

To produce your readable output, just enter

```
> pdflatex ik_report_template.tex
```

The template will automatically include your most recent solution (`\input{IK_solution.tex}`). `IK_solution_NAME.tex` is kept so that solving a new robot does not clobber your old work.

Your output will then appear as `IK_solution.pdf`. The package produces the following output sections in the Latex file:

1. Introduction
2. Kinematic Parameters Lists your DH parameters for reference and error checking.
3. Forward Kinematic Equations These are the automatically computed FK equations that are actually solved.
4. Unknown Variables Lists the unknowns in solution order.
5. Solutions The equations for all solutions for each variable.
6. Solution Branching graph A graph illustrating the dependencies between solutions

Sometimes the equations or the graph can be too long and extend beyond the right side margin. In this case you need to go into the `IK_solution.tex` file and make appropriate edits to break up the equations onto separate lines. Suggestions are provided in comments.

3 LaTeX

If you are not familiar with LaTeX, you can install it in your system, or mouse the latex content into an online tool such as <https://www.overleaf.com>.

Debian Based Linux: `> apt-get -y install texlive`

Other OS: <https://www.latex-project.org/get/>