My ROS project

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***Abstract*—This is my wonderful LaTeX report on my ROS project. In this document, we will ...**

I. INTRODUCTION

This doubled-sided, 2 columns document must not exceed 3 pages, and should be written in English. It should be constituted of a limited number of figures and tables, and be oriented towards the analysis of your architecture and of its performance. It is *not* a purely technical report, we expect you to explain in this document your choices, to analyze their consequences, mainly in terms of performance w.r.t. the task to be solved.

The plan of the document (section/subsection organization) must not be changed. Neverthlesse, you can eventually add some subsections if really required.

II. PRESENTATION OF THE ROS ARCHITECTURE

In this section, you shall present the ROS architecture you build to solve the objectives you mentioned in the introduction. This presentation must be technical and go in depth when needed, so as to demonstrate you ability to master ROS concepts and to use them in an actual project.

A. A short overview

In this subsection, you can first briefly introduce your architecture: used nodes, topics, messages, services, etc. Then, you shall precisely describe some elements, and include and comment a mandatory figure/sketch like in Figure 1 representing the architecture topolgy, i.e. your nodes, how they communicate with each other, etc.

Fig. 1. My very simple architecture.

B. Algorithmic structure of the architecture

In this subsection, you must detail how all the nodes listed in your architecture work together for a given scenario. For instance:

- node A detects an obstacle on the basis on node B which compute the mean distance to a laser impact in front of the robot from the LDS sensor ;
- then, node C decides to stop the robot movement, and sends a request to the service exposed by node D ;
- so, node D decides wether the robot should (choice 1) stay at rest or (choice 2) move away from the obstacle:
  - if choice 1: node D sends ...
  - if choice 2: node D requests ...
- etc.

Such an algorithm, here described in the form of if/else/then statments, can also be described through a state machine that you should carefully and precisely formalize. You can obviously use an additional figure to support your discussions, if needed.

III. PERFORMANCE CHARACTERIZATION

In this section, you must analyzed the performance of your architecture. Such an analysis requires first the formal definition of indicators/cues (e.g. mean errors, response time, etc., like the fictitious H^{∞} definition in Equation (1)) of your choice, which must be correctly chosen so as to assess the performance you are trying to evaluate (e.g. precision of the line following algorithm, stability of the servoing w.r.t. very curved lines, etc.).

$$H^{\infty} = \alpha + \Gamma. \tag{1}$$

Once chosen and defined, you have then to plot –in a specific figure or on a table like in Table I– the values of your indicator and comment its evolution and signification regarding the performance you are trying to reach.

TABLE I
MY SUPER PERFORMANCE INDICATOR

Table Head	**Table Column Head**		
	Table column subhead	***Subhead***	***Subhead***
H^{∞}	42%[a]	67%	89%

[a]Only when it works.

Feel free here to add subsection if it helps in understanding the different steps in your evaluation of your architecture performance.

IV. CONCLUSION AND PERSPECTIVES

You can use this last section to conclude on your work and explain what you could have improved if you had more time, how and why.