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José Mota; Nº1161263

João Flores; Nº1171409

Vasco Rodrigues; Nº1171419

Patrick Timas; Nº1171352

Miguel Albergaria; Nº1170551

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***ABSTRACT***

The theme “Smart Cities” could be divided in multiple subthemes. In this report, we decided to pick “Smart Transportation” as our subtheme aiming to ascertain the problems that our society faces, such as lack of resources and social problems related to the community, as we try to achieve an efficient solution for our problem with the intention of easing everyone’s life.

|  |  |  |
| --- | --- | --- |
| Keywords | | |
| Artificial Intelligence | Sustainable Mobility | Smart Cities |
| Intelligent Environments | Quality of Life | New Technologies |
| Intelligent Transports | Environmental Sustainability | Internet of Things |

Table 1: Key words and expressions commonly used in the “Abstract” section

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***Abstract***

***What is a Summary, Executive Summary and Abstract:***

The summary could be considered as an intelligent way of reading a text, that we pretend to understand or explore fast. The initial reading is a form of recognizing the text, the reader will obtain an overall perspective of the paper without reading the full document.

An executive summary is a brief section at the beginning of a long report that summarizes the document. One who reads only the executive summary should get the essence of the document without fine details.

An abstract should always be a short document because it has the main goal of a technical report.

***Purpose of Summary, Executive Summary and Abstract:***

Both summary and executive summary provide simplification to the full report, containing its key parts. The summary provides with significant parts separated from the initial report whereas the executive summary is found throughout the report’s body and not separated from it.

The Abstract gives them an overview and can help decide which specific sections to focus on. Plus, if the reader is looking for particular information, the Abstract tells them if the document includes that information or not.

***What should each of them provide about the document they refer to:***

The summary contains the most important parts of that report, normally divided in topics, while an executive summary is a text where during the reading of the report, the most important parts are highlighted, and its choice justified.

The abstract should briefly: state the topic, the object of the research, show the main findings and finally present the conclusion. The main problem and the solutions found must always be presented in this section.[2]

***Difference between Introduction and Abstract including his derivates:***

Introduction exploits the main problem and the reason why it is being written about, explaining the topic’s relevance.

It provides the upcoming for the rest of the report so that the lector can follow a concise line of thought. Everything goes to the abstract but it is not be read as a summary. The abstract only contains information presented in the body, new topics are never included.

So the introduction is there to initialize our report and give the reader an idea about what the paper provides, the abstract is a summary for each part of the whole essay.[3]

***Introduction***

When writing a report, the main goal is to retain the reader’s attention. Given that, the document should start with a very well structured and meaningful introduction. In this section we can find a brief summary of the topic to be dealt with throughout the report.[4] A report is divided in four sections [5] :

* Purpose-the purpose of the report;

-includes what the report will recommend;

* Background- provides information on the problem that lead to an investigation;
* Method of investigation-states how investigation was carried out;
* Scope-states the information you need in order to meet your purpose

In the following table, there are some words/expressions typically used in the introduction section [6] [7]:

|  |  |
| --- | --- |
| Key Words | Expressions |
| Argues | Such as |
| Asserts | In order to decide whether.... or not |
| Believes | For example |
| Claims | Including |
| Demonstrates | To illustrate |
| Finds | Notably |
| Establishes | By way of exemple |
| Explains | In this essay… |
| Mentions | Is explained |
| Observes | First of all |
| Proposes | Firstly, secondly, thirdly, finally / eventually |
| Shows | To begin with |

Table 2: Key words and expressions commonly used in the “Introduction” section [8]

***Introduction***

In our report we were given the subject Smart Cities, but we decided to focus on Smart Transportation. We decided to do this sub theme because it is becoming increasingly trendy. To see this theme in real life we just need to turn on the TV to look how far we have come. There are cars that park by themselves and others that can drive by themselves. We decided to relate the Internet of Things and Smart Transportation because we really think that is the future.

***State-of-Art***

Before we move on, it is very important to know the meaning of Smart Cities. So, a Smart city is a high-tech intensive and advanced city that connects people, information and city elements using new technologies in order to create a sustainable, greener city, competitive and innovative commerce, and an increased life quality [9].

With the exponential growth and development of technology and the increasing of the world population, the resources invested in everyday technology are increasing. And transportation is one of the areas more conducive to development. Nowadays some of the smart technologies combined with the Internet of Things that are being developed to help make cities smarter, are used by some emergency ambulances and police from countries all over the world. For example, this new Radio-Frequency Identification(RFID) technology that controls the position of ambulances and if it has an emergency, it changes the traffic lights in order to minimize the time it takes to get to the location [10]. Or the police of Dubai that have cameras in their cars that when pointed to other cars’ license plates show all the cars information.

From our point of view the most important concept related with smart cities is sustainable mobility(SM). In relation to mobility in intelligent environments, spatial mobility should be increased, spatial segregation eliminated or reduced, and social inclusion should be promoted favoring environmental sustainability. SM can be achieved through actions that focus on two contexts, socio-economic and environmental. With respect to the first, actions on the use and occupation of land and on the management of transport must aim at ensuring access to goods and services, with ways to maintain the quality of life of the population. One of the actions is the direction of public transport investment programs of better quality, with adequate tariffs to demand and supply and that guarantee the safety of people [11]. In addition, the need to link these initiatives to an adequate land use plan, which allows for shorter distances, from investments in new housing near the central areas. With regard to the environmental context, actions that prioritize public transportation investments based on clean energy, that create policies to restrict the use of individual transportation in already polluted areas and that implement intelligent systems of traffic control, greater fluidity, reduced congestion and travel times.

***Conclusion***

Like we said in the beginning, transports are becoming even more smarter and technologies are being used to help in our everyday life and improve our way of transportation.

We exposed some examples used in some smart cities around the world. Hopefully with time, all the cities will become smarter and we will see more progress in transportation, that will lead to help everyone’s life and make us even more evolved than we are now.

***Problem Statement***

***Out of context:***

|  |  |
| --- | --- |
| Keywords | Expressions |
| Mishap | “One critical issue” |
| hardship | “To reverse this” |
| Difficulty | “In addition” |
| Obstacle | “Opens up a new field/issue” |
| Setback | “Is an important issue for” |
| Trouble | “Considerable attention has been paid to…” |
| Hindrance | “To portray the issue…” The problem with this approach is” |
| Impediment | “The problem with this approach is” |

When writing a technical report there are rules the writer should and must follow, for it to be correctly structured and meaningful. One important section of the report is the problem statement. It is in it that the writer specifies a possible problem related to the topic being researched. When writing the problem section, it is essential that it has a concise description for the team to be able to focus on what must be solved and eventually reach a solution. When writing the description, besides specifying the problem, it is also important to give a vision of what would the world look like without the problem. Because if with or without the problem there is no change, then the problem that was specified is not a problem. [12] In the following table, there are some expressions/ keywords used in this section of the report:

Table 3: Key words and expressions commonly used in the “Problem” section [13]

***Back of Context:***

In this work, it was being proposed the theme “Smart Cities”, but the theme was too far reaching so we decided to focus in “Intelligent Transports”. We had to develop a problem to the utilization of this innovating way of transportation, and a solution to the problem that we found. The problem that we chose was the limitations of Artificial Intelligent when use in the autonomous driving.

Artificial Intelligence(AI) has been thought about since the decade of 1960 and always imagining how she would behave in human environment, because, even it was more mathematical capabilities and faster conclusions, an IA can’t process in an effective way, a situation that could happen and the IA would not be able to respond in the best way possible because it was not suitable for that situation, unlike us, humans, that can respond to any action that might happen, some of us in a better way of others.

***Solution***

***Out of context:***

What’s the point of having problems without having any solutions? It is similar to making a cake without all the ingredients. So, including a section that expose a solution to a given problem in a technical report will, definitively, improve the reader’s understanding to topic in cause. In order to have enough arguments to sustain a solid foundation for the problem in cause, we have to highlight the advantages that the problem has to offer to the society. [14]

In the following table, there are some keywords and expressions used in this section: [16]

|  |  |  |  |
| --- | --- | --- | --- |
| **Keywords** | | | |
| Resolve | Remedy | Work out | Unveil |
| Solve | Correct | Come up with | Decide |
| Answer | Conquer | Find a way | Settle |
| Solution | Solvable | Provide a solution | Clear |
| Resolution | Recommendation | Deal with | Culminate |
| Prevent | Obviate | Denouement | Coherence |
| Upshot | Proposal | Think of | Unravelment |
| Offer | Conclusion | Possible | Unreveling |
| Help | Suggestion | Key | Disown |
| Unfolding | Explain | Result |  |
| Explanation | Explication | Clarification |  |

Table 4: Keywords used in the solution section of a report

***Back of context:***

In one hand, as a solution to the problem we mentioned previously, nothing will be sent to public without proper testing. Also, they should add an easy method to turn off the AI,so the driver could get the handling of the vehicle pretty fast.

Another solution could be, an even better system of sensors, that could help the AI predict more easily objects, other vehicles and people closer to it. Sending a signal of an emergency in an unused frequency so the developers of the AI and some emergency personal could have be on the move to help the person affected by this problem. [15]

In the other hand, the reflex is a still a new thing in IA technology and it still there is doubt on using this kind of innovating technology, but like we hear and say, “nothing is perfect at the beginning” but we think that AI is going to rule the evolving world, sooner or later.

***Conclusion***

When writing a report there are rules the writer should and must follow, for it to be correctly structured and meaningful. And one of the most important parts is the conclusion which is the last section of the report, therefore it should leave the readers thinking the report is complete while making them think about what they just read.[17]

Conclusions being the “grand final” of the report should or must leave a mark on the readers and there are several ways of doing that. Predict, quote, repeat and summarize are four of those ways, which in the end all have the purpose of reinstating the opinion expressed throughout the report.[18]***.*** In the following table, there are some keywords and expressions used in this section: [19]

|  |  |
| --- | --- |
| Key words | Key phrases/expression |
| Altogether | In conclusion,… |
| Overall | Above all,… |
| Usually | All things considered,… |
| Ultimately | In short,… |
| Obviously | To sum up,… |
| Present | To summarise,… |
| Provide | In brief,… |
| Emphasize | In general,… |
| Result | On the whole,… |
| Despite | In essence,… |
| Compare | In other words,… |

Table 5: Key words and expressions commonly used in the “Conclusion” section

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