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TITLE

Maria Barbosa, Pedro Alves FCT, UFP

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# INTRODUÇÃO

N

Uma fase de pandemia a nível mundial, Covid 19, surgi-nos a ideia de desenvolver um sistema que ajudasse a fazer um pequeno controlo dentro de um edifico.

Este sistema tem como objetivo permitir o controle de acesso a um edifício, assim como medir a temperatura das pessoas e verificar a utilização de máscara das mesmas.

Para tal, utilizaremos sensores como o AMG 8833 para a medição de temperatura, leitor RFID para o controle de acesso, câmera IP para vigilância e reconhecimento de máscara e um Raspberry PI para processar a imagem da câmera além de interpretar os dados de todos os restantes sensores.

# SOTA / RELATED WORK

## Sate of The Art

In this sub-section you should present the existing knowledge and technical background for understanding the particular problems addressed in the paper. This should also include existing solutions and/or frameworks for handling or solving the anticipated problems.

## Related Work

The paper should present and describe the most significant projects that have similarities with the system being proposed in this project.

The authors should emphasize and analyze the similarities and particularly the differences among the projects. The authors should also explicitly point out the advantages and disadvantages of the system being proposed when comparing it with other projects. References to other papers should be inserted through numbers inside square brackets such as [1], [2]

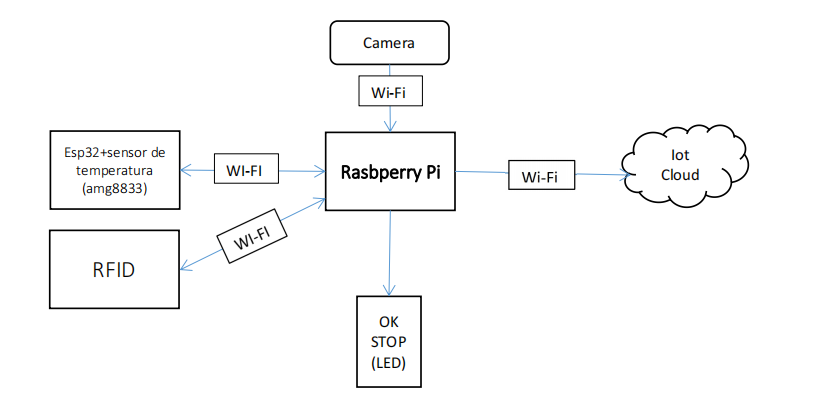


Fig. 1. System Architecture

# System

## Requisitos

1. O sistema deve “identificar” a pessoa (através do RFID),
2. O sistema deve detetar se a pessoa está ou não com máscara
3. O sistema deve efetuar a medição da temperatura

## Arquitetura

Para a implementação deste sistema, o material utilizado foi:

- 2x Placa ESP-32

- 1x Raspberry Pi 4

- 1x Câmera IP

- 1x Sensor de Temperatura AMG 8833

- 1x Leitor de cartões RFID

# Implementation

O sensor de temperatura AMG 8833 está conectado a uma placa ESP-32, que ao ler o valor o envia via wifi para o Raspberry Pi.

O leitor de tags RFID encontra-se também conectado a uma placa ESP-32 funcionando da mesma forma que o sensor de temperatura, isto é, lê o valor dos cartões e os transmite via wifi para o Raspberry Pi.

O Raspberry Pi recebe os valores dos sensores, assim como as imagens projetadas pela câmera IP que se encontra na mesma rede. Além disso, aplica um algoritmo treinado com machine learning com o objetivo de detecção de máscara.

Outras das funcionalidades é possível consultar o número de pessoas no edifício, uma vez que, o Raspberry manda e sincroniza esses dados para a plataforma cloud Thingspeak.

# XPTO System Evaluation

In this section the paper should focus on the evaluation of the system being prototyped. Even if no evaluation is possible, the authors should present the aspects that should be tested/evaluated and how they could realize such evaluation.

# Conclusion

In this final section the authors should present their final conclusions, emphasizing the novelty of their approach or system in comparison with other existing systems. The conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions (i.e. future work).

# Some Common Mistakes

The word “data” is plural, not singular. The subscript for the permeability of vacuum µ0 is zero, not a lowercase letter “o.” The term for residual magnetization is “remanence”; the adjective is “remanent”; do not write “remnance” or “remnant.” Use the word “micrometer” instead of “micron.” A graph within a graph is an “inset,” not an “insert.” The word “alternatively” is preferred to the word “alternately” (unless you really mean something that alternates). Use the word “whereas” instead of “while” (unless you are referring to simultaneous events). Do not use the word “essentially” to mean “approximately” or “effectively.” Do not use the word “issue” as a euphemism for “problem”.

Be aware of the different meanings of the homophones “affect” (usually a verb) and “effect” (usually a noun), “complement” and “compliment,” “discreet” and “discrete,” “principal” (e.g., “principal investigator”) and “principle” (e.g., “principle of measurement”). Do not confuse “imply” and “infer.”

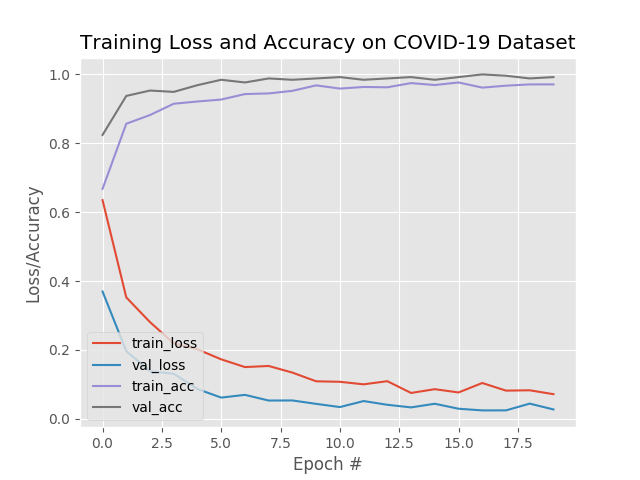
Prefixes such as “non,” “sub,” “micro,” “multi,” and “ultra” are not independent words; they should be joined to the words they modify, usually without a hyphen. There is no period after the “et” in the Latin abbreviation “*et al.*” (it is also italicized). The abbreviation “i.e.,” means “that is,” and the abbreviation “e.g.,” means “for example” (these abbreviations are not italicized).

An excellent style manual and source of information for science writers is [9]. A general IEEE style guide and an *Information for Authors* are both available at <http://www.ieee.org/web/publications/authors/transjnl/index.html>.

# Helpful Hints

## Figures and Tables

Please position the figures and tables at the top or bottom of each column. Large figures and tables may span both columns. Place figure captions below the figures; place table titles above the tables. If your figure has two parts, include the labels “(a)” and “(b)” as part of the artwork. Please verify that the figures and tables you mention in the text actually exist. **Please do not include captions as part of the figures. Do not put captions in “text boxes” linked to the figures. Do not put borders around the outside of your figures.** Use the abbreviation “Fig.” even at the beginning of a sentence. Do not abbreviate



“Table.” Tables are numbered with Roman numerals.

Do not use color unless it is necessary for the proper interpretation of your figures. There is an additional charge for color reprints. **Please note that many IEEE journals now allow an author to publish color figures on Xplore and black and white figures in print. Contact your society representative for specific requirements.**

Figure axis labels are often a source of confusion. Use words rather than symbols. As an example, write the quantity “Magnetization,” or “Magnetization *M*,” not just “*M*.” Put units in parentheses. Do not label axes only with units. As in Fig. 1, for example, write “Magnetization (A/m)” or “Magnetization (Am−1),” not just “A/m.” Do not label axes with a ratio of quantities and units. For example, write “Temperature (K),” not “Temperature/K.”

Multipliers can be especially confusing. Write “Magnetization (kA/m)” or “Magnetization (103 A/m).” Do not write “Magnetization (A/m) × 1000” because the reader would not know whether the top axis label in Fig. 1 meant 16000 A/m or 0.016 A/m. Figure labels should be legible, approximately 8 to 12 point type.

## References

Number citations consecutively in square brackets [1]. The sentence punctuation follows the brackets [2]. Multiple references [2], [3] are each numbered with separate brackets [1]–[3]. When citing a section in a book, please give the relevant page numbers [2]. In sentences, refer simply to the reference number, as in [3]. Do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] shows...”. Please do not use automatic endnotes in *Word*, rather, type the reference list at the end of the paper using the “References” style.

Number footnotes separately in superscripts (Insert | Footnote).[[2]](#footnote-1) Place the actual footnote at the bottom of the column in which it is cited; do not put footnotes in the reference list (endnotes). Use letters for table footnotes (see Table I).

Please note that the references at the end of this document are in the preferred referencing style. Give all authors’ names; do not use “*et al*.” unless there are six authors or more. Use a space after authors’ initials. Papers that have not been published should be cited as “unpublished” [4]. Papers that have been accepted for publication, but not yet specified for an issue should be cited as “to be published” [5]. Papers that have been submitted for publication should be cited as “submitted for publication” [6]. Please give affiliations and addresses for private communications [7].

Capitalize only the first word in a paper title, except for proper nouns and element symbols. For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [8].

## Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have already been defined in the abstract. Abbreviations such as IEEE, SI, ac, and dc do not have to be defined. Abbreviations that incorporate periods should not have spaces: write “C.N.R.S.,” not “C. N. R. S.” Do not use abbreviations in the title unless they are unavoidable (for example, “IEEE” in the title of this article).

## Equations

Number equations consecutively with equation numbers in parentheses flush with the right margin, as in (1). First use the equation editor to create the equation. Then select the “Equation” markup style. Press the tab key and write the equation number in parentheses. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Use parentheses to avoid ambiguities in denominators. Punctuate equations when they are part of a sentence, as in

 (1)

Be sure that the symbols in your equation have been defined before the equation appears or immediately following. Italicize symbols (*T* might refer to temperature, but T is the unit tesla). Refer to “(1),” not “Eq. (1)” or “equation (1),” except at the beginning of a sentence: “Equation (1) is...”.

## Other Recommendations

Use one space after periods and colons. Hyphenate complex modifiers: “zero-field-cooled magnetization.” Avoid dangling participles, such as, “Using (1), the potential was calculated.” [It is not clear who or what used (1).] Write instead, “The potential was calculated by using (1),” or “Using (1), we calculated the potential.”

Use a zero before decimal points: “0.25,” not “.25.” Use “cm3,” not “cc.” Indicate sample dimensions as “0.1 cm × 0.2 cm,” not “0.1 × 0.2 cm2.” The abbreviation for “seconds” is “s,” not “sec.” Do not mix complete spellings and abbreviations of units: use “Wb/m2” or “webers per square meter,” not “webers/m2.” When expressing a range of values, write “7 to 9” or “7-9,” not “7~9”.

A parenthetical statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.) In American English, periods and commas are within quotation marks, like “this period.” Other punctuation is “outside”! Avoid contractions; for example, write “do not” instead of “don’t.” The serial comma is preferred: “A, B, and C” instead of “A, B and C.”

If you wish, you may write in the first person singular or plural and use the active voice (“I observed that ...” or “We observed that ...” instead of “It was observed that ...”). Remember to check spelling. If your native language is not English, please get a native English-speaking colleague to carefully proofread your paper.

# Publication Principles

Authors should consider the following points:

1. Technical papers submitted for publication must advance the state of knowledge and must cite relevant prior work.
2. The length of a submitted paper should be commensurate with the importance, or appropriate to the complexity, of the work.
3. Authors must convince both peer reviewers and the editors of the scientific and technical merit of a paper; the standards of proof are higher when extraordinary or unexpected results are reported.
4. Because replication is required for scientific progress, papers submitted for publication must provide sufficient information to allow readers to perform similar experiments or calculations and use the reported results. Although not everything need be disclosed, a paper must contain new, useable, and fully described information. For example, a specimen’s chemical composition need not be reported if the main purpose of a paper is to introduce a new measurement technique. Authors should expect to be challenged by reviewers if the results are not supported by adequate data and critical details.

Acknowledgment

The preferred spelling of the word “acknowledgment” in American English is without an “e” after the “g.” Use the singular heading even if you have many acknowledgments. Avoid expressions such as “One of us (S.B.A.) would like to thank...”; Instead, write “F. A. Author thanks...” **Sponsor and financial support acknowledgments are placed in the unnumbered footnote on the first page, not here.**

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1. This work was supported in part by FCT under Grant XXX (sponsor and financial support acknowledgment goes here).

   Rui S. Moreira is with the ISUS Unit @ Universidade Fernando Pessoa, Porto, 4200 Porto Portugal (e-mail: rmoreira@ufp.edu.pt).

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