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| Ficha de Proposta de Dissertação/ Projeto/Estágio Mestrado | | | | |
| **Ano Letivo 2019/2020, Mestrado em Engenharia Informática, FCEE / Universidade da Madeira** | | | | |
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| Development of a platform to analyze and provide real-time risk data during extreme weather events | | | | |
| Título do Projeto | | | | |
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| Informação sobre a Dissertação/Projeto/Estágio |

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| Informatics Engineering, Autonomous Driving, Electronic Engineering |
| Área(s) Científica(s)  Motivação   |  | | --- | | As the world population increases does the need to evolve our planet more and more quickly. Day by day the resources of our planet are increasingly exploited because.  This quickly evolution leads to more pollution, deforestation (consequently causes extinction of animals) etc. [1] This is harmful for our planet and consequently for the human life and all the others beings in earth [2].  As a consequence, nowadays we have more and more extreme environmental conditions. In the summer we have drought  periods and on winter we have extreme could conditions and other extreme conditions like a tornado [4].  In some countries that aren’t as evolved, like Portugal, this can be a more seriously problem and a considerable cause of death, because the buildings don’t have a great thermal comfort, the energy is expensive and the people’s incomes are lows and has an aging population that is a risk group for extreme weather condition and in general are more isolated [5].  This thesis aims to evaluate and relate the weather extreme conditions and the poor thermal quality of buildings and create  a system that which will provide risk real-time data during extreme weather events. With this system we can see what the more affected zones in order to focus our effort helping people in these places [3].  In summary, the proposed system, aims to contributing in:  Safety: With this system in real time we can help people in more affected zones. Reducing the number of deaths due this extreme weather conditions.  Prevention: We can use the system data to prevent future problems. For example, if it is expected that for tomorrow, we will have an extreme weather condition in a certain zone, with system data collected in the past, we can predict what zones and what buildings can will be more affected and take preventive measures [3].  [1] M. L. Frankel and D. H. Lewis. 1970. Regional air pollution analysis. In Proceedings of the fourth annual conference on  Applications of simulation. Winter Simulation Conference, 82–93.  [2] Md Faruck and Punyasha Chatterjee. 2018. Air pollution detection using multisensor data fusion. In Proceedings of the Workshop Program of the 19th International Conference on Distributed Computing and Networking (Workshops ICDCN '18). Association for Computing Machinery, New York, NY, USA, Article 24, 1–2. DOI:https://doi.org/10.1145/3170521.3170545  [3] Abdulfatai Popoola, Dmytro Krasnoshtan, Attila-Peter Toth, Victor Naroditskiy, Carlos Castillo, Patrick Meier, and Iyad Rahwan. 2013. Information verification during natural disasters. In Proceedings of the 22nd International Conference on World  Wide Web (WWW '13 Companion). Association for Computing Machinery, New York, NY, USA, 1029–1032. DOI:https://doi.org/10.1145/2487788.2488111  [4] Xuan Song, Quanshi Zhang, Yoshihide Sekimoto, Ryosuke Shibasaki, Nicholas Jing Yuan, and Xing Xie. 2016. Prediction and  Simulation of Human Mobility Following Natural Disasters. ACM Trans. Intell. Syst. Technol. 8, 2, Article 29 (January 2017), 23 pages. DOI:https://doi.org/10.1145/2970819  [5] Liang Zhang, Abraham Hang-yat Lam, and Dan Wang. 2014. Strategy-proof thermal comfort voting in buildings. In  Proceedings of the 1st ACM Conference on Embedded Systems for Energy-Efficient Buildings (BuildSys '14). Association for Computing Machinery, New York, NY, USA, 160–163. DOI:https://doi.org/10.1145/2676061.2674074 |   Objetivos   |  | | --- | | During the period of the proposed thesis students are expected to:  • Develop a literature review starting from the work referenced in the motivation of this proposal  • Study the Madeira Interactive Technologies Institute (MITI) most common tasks performed in similar systems  • Study the most commons ways to interact with big data  • Create a mockup  • Implement the dashboard  • Implement the API in order that others sites can consume the data  • Implement a crowdsourcing platform   * • Perform the evaluation. |   Recursos   |  | | --- | | The student will be provided with all the required resources for this Project:  • Web technologies  • Big data  • Access to literature libraries  • Desktop |   Preencher no caso de o projeto ser desenvolvido numa Entidade Exterior:   |  |  |  | | --- | --- | --- | | Madeira Interactive Technologies Institute (MITI) |  | (291 721 006) | | Nome da Entidade |  | Contacto Telefónico | | Caminho da Penteada, 9020-105, Funchal |  | admin@iti.larsys.pt | | Morada |  | E-Mail |   Observações e/ou Pré-Requisitos   |  | | --- | |  | |