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| 5. TÍTULO E SUBTÍTULO:  Multi-agent graph exploration without communication | | | |
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| 1. INSTITUIÇÃO(ÕES)/ÓRGÃO(S) INTERNO(S)/DIVISÃO(ÕES):   Instituto Tecnológico de Aeronáutica – ITA | | | |
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| 10. APRESENTAÇÃO: **( X ) Nacional ( ) Internacional**  ITA, São José dos Campos. Curso de Graduação em Engenharia de Computação. Orientador: Prof. Dr. Luiz Gustavo Bizarro Mirisola; coorientador: Prof. Dr. Vitor Venceslau Curtis. Publicado em 2023. | | | |
| 11. RESUMO:  Computer search algorithms have been trained by scientists and engineering companies since the last century due to the applications of such algorithms in real-world situations such as airline scheduling, route planning on maps, Internet search algorithms, route planning on network networks. computing, robotics, etc. Usually, these methods are based on abstract types of data, such as graphs and trees, to transfer a real problem into a delimited and computationally tractable context. In the field of Computer Science, graphs are abstract types of data that can serve as tool support for search algorithms. Focusing on maze search algorithms, this undergraduate work proposes a method for exploring graphs by agents previously coordinated, but unable to communicate with each other. Such agents are previously programmed to spread throughout the graph in as dispersed a manner as possible, in order to avoid repeating paths and, finally, minimize the number of steps until the objective node is found. This approach is motivated and inspired by real problems, such as exploration at the bottom of the sea, searching structures made up of massive walls, searching inhospitable places for agents with energy restrictions, etc. This work also explores as a tool the numerical representation on a mixed basis, which, in the meantime, is capable of representing the visited nodes and the corresponding paths from the root, as well as their relative positions in an in-order route of the maze seen. like a tree. This allows not only to continue a route through its immediate neighbors, but also to develop strategies to maximize the dispersion of agents throughout the maze. Finally, this report presents a performance comparison between the developed algorithm and the extended Tarry algorithm, proposed by Kivelevitch & Cohen (2010), whose methods are anchored in communication between agents, unlike the proposal of this work, in which agents cooperatively explore a graph without communication between them. It should be noted that, although the proposal of this work can be understood for graphs in general, the present research only deals with perfect labyrinths, that is, trees. | | | |
| 12. GRAU DE SIGILO:  **( X ) OSTENSIVO ( ) RESERVADO ( ) SECRETO** | | | |