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| **Project Information** | | |  |
| **Project Title** | **Department/Faculty/University** | **Project Field/Discipline** | **عنوان المشروع باللغة العربية:** |
| **Simultaneous Localization And**  **Mapping (SLAM)** | CSE/Engineering/Ain Shams | Embedded Systems and Robotics | **نظام التموضع وبناء الخريطة في آن واحد** |
| **Advisors’ Names** | **Advisors’ Mobile Numbers** | **Advisors’ Email Addresses** | **Advisors National ID** |
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|  |  |  |  |
| **Students’ Names** | **Students’ Mobile Numbers** | **Students’ Email Addresses** | **Students’ National ID** |
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**iGP Module Proposal**

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| **Motivation** |
| **Please write why you chose this project idea, explaining clearly**  (i) Problem definition, (ii) approach and tools/techniques, and (iii) overview of system modules. |
| Because it help us face more problems in Embedded systems which makes us know more about embedded systems and robotics which is one of our interests.  It’s a developing field so learning more about embedded systems in general and SLAM in specific helps us to be always following up what’s new. |
| **فيما لا يزيد عن 200 كلمة أكتب وصف عن المشروع باللغة العربية:** |
| هذا المشروع الغرض منه هو الاستكشاف في هذا المشروع سوف نقوم بصناعة Robot يسير من طلقاء نفسه عندما تضعه في مكاننا ما ويسير في جميع أنحاء المكان دون ترك أي جزء من المكان وعندما يفرغ من استكشاف المكان يعود إلي المكان الذي بدأ منه ويرص خريطة للمكان |

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| **Why do you think your project should be funded? In which the applicants write in a few lines where the help statement should be “Explain in no more than 3 lines the new and innovative aspects in your project that make it worthy of funding** |
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| **.” What is its impact on community/market/end user/…?** |
| It helps in exploration, and can be used in many fields as navigation, exploring ancient places and old warehouses. |
| **Block Diagram** |
| **Please insert the project detailed block diagram below, (Please highlight the parts that will be implemented in different colors than the parts that will be purchased)** |
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| **Prototype Description and Specifications** |
| **Include a clear description of how the prototype will operate, explaining a scenario/use case of the operation. Also, include the performance metrics you target in the prototype.** |
| **A wheeled robot will be put in a room it will explore all the room autonomously without leaving any part unexplored and drawing a map for the room.** |
| **What are the project’s deliverables?** |
| **A robot when you turn it on in a place it can explore each and every part of it and draw a map for it.** |
| **Project Plan “Timeline”**  **Please define the approach and phases to deliver the intended project outcome** |
| **1 November - 30 November:** Using the Kit and making the robot moves & Finishing the online SLAM course.  **1 December - 15 December:** Showing Sensors reading and make the robot interface with it & Deciding Kalman Filter.  **16 December - 25 January:** Choosing Algorithm and Final Exams.  **26 January - 28 February:** Applying Kalman Filter and debugging it.  **1 March - 31 March:** Implementing the First Algorithm and finding its weak point.  **1 April - 30 April:** Replacing parts of the algorithm or using another algorithm if needed, and using different or more advanced sensor if necessary.  **1 May - End:** Making project Demo, Fixing bugs, Tiny Changes and Thesis. |
| **Do you foresee any potential marketing or customers?** |
| Yes it is sold abroad for commercial purpose for exploration warehouses and it used to make autonams home cleaner. |
| **Do you foresee creating a startup based on the outputs of this project?** |
| Yes a startup company can be created base on this concept as an exploration company can be done with a very little cost. |
| **Have you participated as a team in any competition?**  **If so, which one? And what was your achievement?** |
| No |
| |  | | --- | | **Role of the Industrial Partner (if any)** | | **What is the type of support to be provided by the industrial partner (technical, financial, access…)?** | |  | |

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| **Prototype Prospects** |
| **List the Egyptian ICT companies that may be interested in the developed prototype and the end-users/customers (name the specific class of individuals, governmental agencies, ministries … etc. that will benefit from the prototype)** |
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| **Project Budget** | | | | | | |
| **Item** | **Type (Hardware/ Software/ Other)** | **Part in the Block Diagram** | **Possible Provider/ Merchant** | **Specifications** | **Quantity** | **Price in EGP** |
| Lidar | Hardware |  |  | Laser-based sensor | 1 | 2000 |
| UMI | Hardware |  | Future/Mamoun | 9 degrees of freedom | 1 | 300 |
| Mx1 or Mk1 | Hardware |  |  | any | 1 |  |
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| **Grand Total** | | | | | | 2300 |