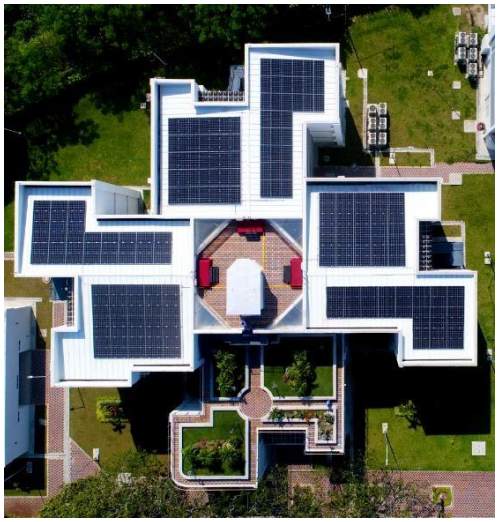
KNOWLEDGE TEST

SOLAR PANEL CLEANING SERVICE | 2024



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https://sunnybotics.com

Mechatronic engineer hiring test

1st part.

As part of the developing team of sunny app you have to design the proposal for a cleaning robot for the solar panels as those ones in the image 1. You have freedom to define the initial conditions of design and the scope of the proposal, (you must put it in the document you deliver).

Figure 1. Solar plant Yumbo (Valle del Cauca, Colombia).

For the proposal you must fulfill the design steps, including background investigation, mechanical and electronic hardware design, budget estimation and time estimation. Use whatever tool you consider make the proposal clear and easy to understand. Add qualitative and quantitative measures to your proposal.

To guarantee a good proposal use all the technical knowledge that you have and all the expertise about project formulation, material and off the shelf components selection, and possible supplier's selection. Also, you will be qualified under the following aspects:

Innovation: Originality and creativity in the robot design. You must involve background investigation and state of art to build the proposal without reducing efficiency in the solar panels. You must propose a robot that improves performance, cleaning efficiency, security and cost effectiveness.

Mechanical and electronic design: the propose must include a mechanical and electronic design, material and off the shelf component selection, supplier's selection, all contained in a unified solution.

Manufacture viability: the proposal must be able to manufacture. Include the budget and time estimation.

Documentation: The proposal has to be clear and well documented. Use all visual tools that you consider including diagrams, figures, draws, 3D models, plans or whatever tool that support your work. r

2nd part.

Please answer the following software development knowledge test. To assure you have a good performance in the test please look the following qualification bullets:

- Object-oriented coding (20/100): With this test we seek to assess the ability of applicants to design, structure and develop code based on principles such as encapsulation, inheritance and polymorphism. Likewise, the correct application of object-oriented design patterns will be verified.
- Use of repositories: (10/100): In this test, we will assess applicants' ability to work with version control systems (such as Git), perform basic branching and merging operations, and maintain a clean and well-organized history of code.
- Multi-threaded use (20/100): During the evaluation, we will focus on evaluating the ability of applicants to develop efficient and error-free solutions in multi-threaded environments.
- Modularity (10/100): The test will test applicants' ability to design and develop cohesive modules, properly coupled and with a focus on code reuse.
- Use of libraries (10/100): We will assess the ability of applicants to integrate and use libraries effectively, ensuring proper use, avoiding conflicts and errors associated withdependencies.
- Result (30/100): The result will evaluate the quality of the code. the indentation, thesolution and the report to its solution.

Only the languages, C, C++ and PYTHON, the main languages used for the programming of robots and ROS, will be taken into account.

Test's link GitHub for 2nd Part- Software testing.
https://github.com/SunnyApp-Robotics/PruebaIngreso