**Abstract 10%**

**https://writing.wisc.edu/handbook/assignments/writing-an-abstract-for-your-research-paper/**

An abstract is a short summary of your (published or unpublished) research paper, usually about a paragraph (c. 6-7 sentences, 150-250 words) long. A well-written abstract serves multiple purposes:

* an abstract lets readers get the gist or essence of your paper or article quickly, in order to decide whether to read the full paper;
* an abstract prepares readers to follow the detailed information, analyses, and arguments in your full paper;
* and, later, an abstract helps readers remember key points from your paper.

**Introduction 10%**

In this project we will be making use of our programming knowledge in python in order to program a robot arm in a simulation environment that will be used in this project to demonstrate a simple welding operation using python. In this operations a welding torch the ‘Abicor Binzel’ weld torch will be attached to the ‘ABB IRB 1200-5/0.9’ robot arm. Python programming will be used to weld the area around a target point in a specific shape to simulate welding a shape like hexagonal or circular shaped piece of metal onto another metal, and as such this program could be re-purposed using this same robot arm or one with a longer reach in combination with another tool such as a a engineering scribe to mark out shapes to help engineers to make more precise cuts or a laser cutting tool to laser cut simple shapes out of a material.

The rest of the document will contain information on how we went about accomplishing the welding operation using python programming.

**Related Studies 5% - explain your research and your sources that you used, research analysis… where it can be applied/used and what sources you used to come to ur proposed solution, all the code you got and where you got it from**

The goal of this project was to use the python programming language to automate some kind of industrial process, and so our group chose to automate a welding operation using a simulation environment that allows for programming robot arms using the python programming language.

In searching for simulation environments that allowed for programming using python we came across many other options out there such as Webots, Klampt, Gears and others, but we eventually settled on using the RoboDK simulation environment that was seen being used in a video titled “Offline Programming With Python – RoboDK” (RoboDK, 2015). The RoboDK simulation environment was used because of its userfriendliness and the many tutorial videos that have been uploaded by the compmay behind the RoboDK software which would greatly aid us in not only learning how to properly use different features of the software but it would also help us if we happen to run into any errors or bugs.

Some of the code written in this project comes from the youtube video from RoboDK and from some of the examples that are available on the RoboDK PythonAPI documentation page.

**Proposed solution 25% - This is the approach you took to solving the problem/proposal, your code in here.**

**Maybe put Algorithm in here**

sda

**Results and Analysis 30% - The program, flowcharts, screenshots etc**

sda

**Conclusion and future scope/work 10%**

dasd

**Bibliography/References 10%**

**https://robodk.com/doc/en/PythonAPI/examples.html**

**https://robodk.com/doc/en/Basic-Guide.html**

**https://robodk.com/doc/en/PythonAPI/intro.html**

**https://www.youtube.com/watch?v=Ic-iKGSc7dk&t=1s**