

## **Reflection Essay on MATLAB Kinematics Implementation**

I was in charge of the “Robotic Arm & MATLAB Kinematics Interface” project for the Intro to Robotics course with everyone’s consent. Right away, I explored the internet to find out what a robotic arm can do and how MATLAB can operate its movements. The quick review of the business plan reassured me about being the team leader and planning the upcoming steps.

When I was sure about what was expected, I talked with every team member about their skills and interests. All of us agreed that CAD design would go to which member, cutting and assembling would go to one, kinematics code would be written by one, and the presentation and report would belong to another team member etc. To make everything organized, I prepared an Excel sheet that showed all the team members and their assigned roles, added a Google Drive folder called “Robotics Project” with subfolders for each member, and created a small guidelines document using your (Sir Haroon’s) tips on teamwork and meeting the deadlines. We used our group chat every single day to update each other, ask anything, and post reminders so everyone was well informed.

Besides organizing everyone, I also had to complete additional tasks as group leader. I made the last report, designed the project poster, made the presentation slides, and organized all of our information. In addition, I finished the kinematics code I wrote using MATLAB. Managing all these jobs was hard, and I usually stayed after hours to make certain everything was done. Doing this job helped me develop the skills to manage my time well and handle several tasks at once.

In the beginning, we established our own deadlines so we would make progress quickly. Yet, a problem happened with our CAD model: the joints and alignment were off, so we used most of the free time to fix the arm and make new parts. At the same time, complete paperwork, presentations, and lab assignments took much of our time and we were unable to meet the deadlines. It turned out that although we arranged deadlines in advance, we still had to give more time for redesigns and when we became very busy.

Thanks to how often and openly we communicated, we solved problems very fast. As people had different opinions on the CAD design, I called a zoom meeting to talk it through

and found a solution for everyone's satisfaction. Our regular updates and trustworthy communications made it uncommon for us to get blocked on our projects.

I am pleased that we have everything ready and the project functions honestly. Because we divided our roles clearly, talked a lot, and had a positive attitude when resolving issues, we continued to advance. When we work on another project, I will make extra time for redesigns, have quick weekly sessions to check on progress, and design the schedule with what I discovered this time. Taking care of this project and its huge importance gave me useful lessons for working together in the future.