

**Position Error Estimation and Compensation of 3-DOF Delta Robot under the effect of Link Tolerances**

Weekly Report

*Submitted by*

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SECTION A

*Under the guidance of*

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**DEPARTMENT OF MECHATRONICS**

November 2021

**Week No. 2**

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| **Sl. No.** | **Date** | **Details of work carried out** | **Comments** |
| 1 | 19/10/21 | **Mathematical Modelling Plan**  A plan was developed on how to go about the most important aspect of this project i.e. the mathematical modelling. The approach to be used inorder to obtain the direct kinematics was discussed and put forward by the students |  |
| 2 | 20/10/21 | **Choice of Dimension**  A literature review was done inorder to check appropriate dimension for verification of desired values. Various scenarios were analyzed including the four quadrants and singularity condition. |  |
| 3 | 21/10/21 | **3D CAD Model**  CAD Modelling of the 3 DoF Delta Robot was carried forward with the appropriate dimensions chosen the day before. |  |
| 4 | 22/10/21 | **Forward Kinematics – Ideal Condition**  The mathematical modelling of Forward kinematics under ideal condition was done using algebraic approach. |  |
| 5 | 23/10/21 | **Verification of Mathematical Model using Simulation**  The mathematical model derived was verified using code / simulation on Python and the graphs were plotted on Matlab for detailed study and understanding. |  |
| 6 | 24/10/21 | **Weekly Updates**  At the end of week 2, the work done so far was put forward to the guide inorder to review the process . Through this a deeper understanding of the results were obtained. Verification was successfully done. |  |
| **Summary of the work done in the week:**  The second week was majorly about mathematically modelling the direct kinematics of the delta robot. Deriving the equation appropriately was the most important step required to kickstart the project which was done successfully and further verified through prior literature and simulation cross check as well as 3D CAD Model. | | | |

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| **Challenges faced during the work:**  The Modelling of the direct kinematics of the delta robot was a good challenge, it required critical thinking and strong hold of few mathematical concepts which were required in the process of the derivation. |
| **References:** |
| **Remarks:** |
| **Suggestions by the guide:** |
| **Signature of Student Signature of the guide** |