Initial Project Plan 20/09/2024

Topic: Industrial robot in harsh conditions

Challenges:

* Pick up rebar and plate from one location and place them onto a tray
* Using manipulator to insert rebar into a plate
* Integrate design with company’s machine model

Main Goal: Design a robot to assemble rock bolts in harsh conditions

Main Tasks:

* Check and revise design of tray if necessary
* Design and program manipulator
* Design and build (optional) an end effector
* Prepare the simulation
* Design the protection of the machine for harsh conditions (Only concept, extra works)

Timeline:

*Refer to Project Schedule*

Resource Planning:

Kin: Project manager and Gripper Design

Eren: Tray Reconfiguration and Electrical Design

Daniel: Robot System

SWOT:

Strengths: Different study backgrounds and work experience.

Weaknesses: All in the same master's degree and limited time.

Opportunities: Multiple robots are available in the lab and collaboration with Sandvik

Threats: Limited budget and working with a scale of 1:5 may skew results.

Risk Analysis (ISO.12100):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk** | **Severity (1-5)** | **Probability (1-5)** | **Risk Level** | **Mitigation** |
| Uncertainty in requirements | 4 | 2 | 8 | Multiple meetings to discuss needs and present prototypes to clarify. |
| Missing components | 4 | 2 | 8 | Involve the coordinator in the meetings to consider available lab resources. |
| Scheduling problems | 3 | 2 | 6 | Plan meetings at least a week in advance. |
| Lack of expertise | 4 | 2 | 8 | More time will be allocated to tasks. |
| Insufficient budget | 5 | 3 | 15 | Coordinate with the university. Simulation is priority. |