Simulation and modelling

Autonomous Robotic Arm

**Group 1: André Håland, Erlend Helgerud**

# **Abstract**

**What is the problem?**

**The problem is mainly based in the fact that a lot of tasks done today are done manually because of the demand for precision. An example is the cleaning of salmon-filets, which needs to be done with high precision in order to negate losses.**

**What do we propose?**

**Autonomous Robotic arm which detects an object or color and pokes it**

**How does it work?**

**The robot’s area of action is defined by a plane which is monitored by a camera. The first step is to move the robot to given [x, y] without a detection system. The second step is to implement a detection system which autonomously detects the point and gives input to the robot.**

**What kind of model?**

**Kinematic model that maps the Cartesian space into joint space for the robot, meaning each axis of the robot will get an angle it should rotate in order for the entire robot to reach the specified point [x, y]**

**How to demonstrate it?**

**The system will be presented both in a simulated environment with a 1-to-1 relationship with a physical robot in the world.**

**Requirements:**

**The robotic arm shall:**

* **Move in three axes (x, y, z).**
* **Have an area of operation specified by a plane (50cm x 50cm)**
* **Receive Cartesian coordinates from the camera.**
  + **Touch the spot given by the received coordinates.**
  + **Be able to move to the reference/reset position after action.**
* **Give output which allows the measurement of speed.**