# Report on homework_4 Intro2Rob

## Done by:

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## Tasks:

1. Matlab / Python code

2. Develop complete and irreducible geometric model suitable for identification;

3. Generate experimental data for 30 experiments (choose configurations optimally or randomly according to the robot limits);

4. Identify geometric model parameters for experimental data and compare results with the original one;

## Links:

github.com: [Github Link](Github Link)

source learning:  [FANUC explanation](FANUC explanation)

## FK:

**Tz(d1)*Rz(q1)*Ty(d2)*Rx(q2)*Tz(d3)*Rx(q3)*Tz(d4)*Ty(d5)*Ry(q4)*Rx(q5)*Ty(d6)*Ry(q6)**

## Irreducible model:

```
T = Tbase * Trobot * Ttool
```

```
% ang_err = 1/180*pi + (3/180*pi)*rand(3,1)
% T = [Tx*Ty*Tz]*
% Rz(q1 + ang_err(1))*[Tx*Ty*Ry]*
% Rx(q2 + ang_err(2))*[Ty*Ry*Rz]*
% Rx(q3 + ang_err(3))*[Ty*Tz*Rz]*
% Ry(q4 + ang_err(4))*[Tx*Tz*Rz]*
% Rx(q5 + ang_err(5))*[Tz*Rz]*
% Ry(q6)*
% [Tx*Ty*Tz]
```

# Parameters.

real_params =        [0.0000, 2.0526,2.8181,0.0653,0.0270,1.0005,1.002,0.0496,0.0232, 0.0225, 1.7511, 1.4983, 0.0678, 0.0327, 2.5668, 2.5280, 0.0291, 0.0562, 2.7985, 0.0519 ];
estimated_params = [-0.0000 2.0003 0.0259 0.0600 0.0016 2.2653 -1.0488 -0.0035 0.0011 0.0172 -0.8514 1.1655 0.0011 0.0021 0.1975 -0.3163 0.0001 -0.0006 0.4613 0.0011 ]


# Conclusion:

We need calibration, in our steps to see, what our real and what our estimated params to find out error, which we will need to minimize.