EC4.402: Introduction to UAV Design: Assignment II (Spring 2022)

- *Total 10 marks.*

- *Due date: April 16, 2022.*

- *Assume any data if found missing and mention your assumption in the answer.*

- *MATLAB, PYTHON programming can be used (no need to submit the codes).*

Q.1) Find the acceleration input (a_x, a_y, a_z) required for a quadrotor to navigate from (0, 0, 0) to

a) $(20, 40, -5)$
b) $(30, -50, -5)$
c) $(-10, -60, -5)$
d) $(-70, 30, -5)$

All the units are in metres.

Plot the acceleration (a_x, a_y, a_z) as a function of time and also the desired roll angle (ϕ_d), pitch angle (θ_d) and thrust (T_d). The mass of the UAV, $m = 2$ Kg and the yaw angle, $\psi = 0^o$.