

HOMWORK # 1

ROBOTICS: Kinematics and Dynamics

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1. (15 pts) From examples given in class (or your own examples), pick one robotic manipulator, and write a half page description of the system, including a brief picture, a geometrical description of the degrees of freedom, a photograph, a list of hardware and software subsystems, and examples of how the robots were used.
2. (15 pts) In a sentence or two, define *kinematics*, *workspace*, *trajectory* and *degree-of-freedom*. Considering a rigid body in a 2 and 3-dimensional space, how many degrees of freedom does it have?
3. (10 pts) What is the essential feature that distinguishes *soft* automation from *hard* automation?
4. (10 pts) Using your own words, describe the difference between *resolution*, *repeatability* and *accuracy* for a robotic system.