# Alternative inverse kinematic calculation methods in velocity and acceleration level

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*Abstract*: Inverse kinematics calculation of manipulators is a common building block in most of the robotic control processes. However, the numerical implementation of the inverse kinematics calculation has several alternatives yielding certain advantages and disadvantages. This paper compares two approaches. In the classical one, the joint position increment is stepwise calculated based on the local velocity vector of the desired trajectory. In contrast, the joint position increment is obtained from the error between the desired and the realized trajectory in some alternative methods. The two approaches are also distinguished on the acceleration level. Our analytical and numerical studies show the benefits and drawbacks of these inverse kinematics methods.

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