

Attitude and Position Tracking

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ABSTRACT

Several applications the tracking of attitude and position of a body based on velocity data. It is tempting to use direction cosine matrices (DCM), for example, to track attitude based on angular velocity data, and to integrate the linear velocity data separately in a suitable frame. In this chapter we make the case for using bivectors as the attitude tracking method of choice since several features make their performance and flexibility superior to that of DCMs, Euler angles or even rotors. We also discuss potential advantages in using CGA to combine the integration of angular and linear velocities in one step, as the features that make bivectors attractive for tracking rotations extend to bivectors that represent general displacements.