عنوان مقاله:

Adaptive size-independent control of UD and BD vehicle convoys with partial measurement based on constant distance plan

نویسنده:

Hossein Chehardoli - *Department of Mechanical Engineering, Ayatollah Boroujerdi University, Boroujerd, Iran*.

خلاصه مقاله:

The adaptive size-independent consensus problem of uni-directional (UD) and bi-directional (BD) decentralized large-scale vehicle convoys with uncertain dynamics has been investigated in this research work. The constant distance plan (CDP) is employed to adjust the distances between successive vehicles. We assume that only relative displacement information between adjacent vehicles is accessible (partial measurement) and other information such as relative velocity and acceleration are not provided. The stability of the convoy can be performed by the analysis of each couple of consecutive vehicles. The main objective is to design an adaptive size-independent control protocol maintaining internal and string stability based on CDP with only partial measurement. Appropriate adaptive rules are derived to estimate the uncertain dynamics by utilizing only relative displacement. It will be proved that the presented adaptive protocol assures both internal stability (asymptotic stability of closed-loop convoy) and string stability (tracking error attenuation) of large-scale decentralized UD and BD convoys under the CDP. Simulations demonstrate the efficiency of the presented control framework.

کلمات کلیدی:

Uni-directional topology (UD), Bi-directional topology (BD), Large-scale vehicle convoy, Adaptive consensus, Robust performance, Partial measurement.

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/1865269