A Transportation System Using Personal Mobility Vehicles with automatic platoon driving

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What is a Personal Mobility Vehicle?
PMV (PMV is an abbreviation for personal mobility vehicle) is a personal transporter using inverted pendulum control system. Recently, it is attracting attention as a transportation vehicle. In Japan, however, it is not permitted to ride PMV on public roads. We can use it on restricted space.

Proposal of Use PMV as a Transportation System
As a new way of using PMV, we propose a transportation system for people, like an escalator or a moving walkway, by PMV automatic driving. We assumed that PMVs read a path by using sensors, so they can follow the trajectory automatically.

Because many PMVs run on the trajectory, PMVs use spacing control. PMVs control its speed and keep the interval of PMVs for safety and space efficiency.

Simulation Results

- Trajectory Information (straight course → curve course → deceleration → acceleration)
- Initial Conditions
- Results of Trajectory Tracking Control
- Results of Spacing Control (target speed: 2.5m/s)