

Group cycling meets technology: A cooperative cycling cyber-physical system

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© 2000-2011 IEEE. The initiatives of cycling infrastructure enhancements around the world reveal a consistent interest in promoting cycling to transition toward sustainable lifestyles and safe multi-modal commuting. Accordingly, proposals for cyber-physical systems for smart cycling are also growing, providing solutions to make cycling a safer and better experience for cyclists. However, most existent solutions address single cyclist problems rather than group cycling issues. It is evident that further work is needed to improve safety and comfort for groups of cyclists traveling on busy urban bicycle paths or dedicated bicycle highways. In this paper, we position the concept of technology-Assisted cooperative cycling. We introduce a platoon-based cyclist cooperative system that provides safe and efficient coordination for groups of cyclists. We present the results of an experimental prototype tested on real cyclists as well as comprehensive simulations that test the performance of our s