Motion planning in dynamic environments, state of art and future trends

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Abstract: Avoidance of moving obstacles as well as interception of moving targets is a subject of increasing importance in robot motion planning due to the increasing use of robots in dynamic environments, i.e. space populated by humans, vehicles and other moving devices. This talk will present an overview of some of the methods used to approach the problem, and will then focus on the Velocity Obstacle (VO) method, with its simple basic ideas and the many extensions to the basic algorithm developed by various authors. In particular, the talk will present the inclusion of probability to VO, its integration with interception algorithms, and the extension of VO to the problem of non-linear trajectories.

The talk will end with some speculations on how to extend this approach to more complex cases, to understand how humans develop planning strategies, and how to apply it to the development of the cognitive robot Xpero.