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*Moscow Institute of Physics and Technology and Yandex: an overview of joint projects*

Object detection and recognition in the dynamic environment is one of the main objective for self-driving perception system. However for safe navigation and motion planing objects motion state estimation and prediction is also a crucial task.

In this talk an overview of optimization algorithms in application for self-driving perception and prediction tasks will be given. In particular, 3D flow estimation as energy minimization problem and message passing algorithms will be discussed.

Also an overview of random finite set and particle filter approaches will be given in application to motion parameters estimation task.