

Dynamics and control of a guiding model

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Abstract : We model, simulate and control the guiding problem for a herd of evaders under the action of repulsive drivers. The problem is formulated in an optimal control framework, where the drivers (controls) aim to guide the evaders (states) to a desired region of the Euclidean space.

Classical control methods allow to build coordinated strategies so that the drivers successfully drive the evaders to the desired final destination.

But the computational cost quickly becomes unfeasible when the number of interacting agents is large.

We present a method that combines the Random Batch Method (RBM) and Model Predictive Control (MPC) to significantly reduce the computational cost without compromising the efficiency of the control strategy.

This talk is based on joint work with Dongnam Ko, from the Catholic University of Korea.