COURSE: Solving optimal control problems with shooting methods

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We give an overview of the shooting technique for solving deterministic optimal control problems. This approach allows to reduce locally these problems to a finite dimensional equation. We first recall the basic idea, in the case of unconstrained or control constrained problems, and show the link with second-order optimality conditions and the analysis or discretization errors. Then we focus on two cases that are now better undestood: state constrained problems, and affine control systems.

References. J.F. Bonnans: *The shooting approach to optimal control problems.* Proc. IFAC International Workshop on Adaptation and Learning in Control and Signal Processing, Caen, July 3-5 2013 (available on the Hal-Inria website).