

On Optimal Trajectory Planning

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Autonomous vehicles are destined to replace human drivers in the not too far future. A major technology component of automated vehicles is a trajectory planner that drives the vehicle to a desired destination while accounting for its dynamics, obstacles, and road conditions. In this talk, the problem of optimal trajectory planning will be discussed in the context of autonomous vehicles, highlighting such issues as the unifying principle behind most motion planners, the trade-off between efficiency and optimality, and the widely accepted compromise on completeness and optimality. An efficient online planner that accounts for vehicle dynamics yet is complete and near-optimal will be presented.

About Speaker: Professor Shiller is the founder and chair of the Department of Mechanical Engineering and Mechatronics at Ariel University and the director of the Paslin Laboratory for Robotics and Autonomous Vehicles. He earned the B.Sc. degree from Tel Aviv University, and the M.Sc. and Sc.D. degrees from MIT, all in Mechanical Engineering. Before joining Ariel University in 2001, he served on the faculty of the Department of Mechanical and Aerospace Engineering at UCLA where he lead the teaching and research activities in Robotics and directed the Laboratory for Robotics and Automation. Professor Shiller's research activities have focused on optimal motion planning, obstacle avoidance in static and dynamic environments, navigation of off-road and intelligent road vehicles, and on assistive robotics. Prof. Shiller is the founding Chair of the Israeli Robotics Association.