

Project Information Form

Project Title:	Deep Learning–based Eco-driving System for Battery Electric Vehicles
University:	University of California, Riverside
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Funding Source(s) and Amounts Provided (by each agency or organization):	U.S. Department of Transportation (US DOT) - \$70,000.00
Total Project Cost:	\$70,000.00
Agency ID or Contract Number:	DOT 69A3551747114 UCR-DOT-407
Start and End Dates:	July 1, 2017 – June 30, 2018
Brief Description of Research Project:	Eco-driving strategies based on connected and automated vehicles (CAV) technology, such as Eco-Approach and Departure (EAD), have attracted significant worldwide interest due to their potential to save energy and reduce tail-pipe emissions. In this project, the research team developed and tested a deep learning–based trajectory-planning algorithm (DLTPA) for EAD. The DLTPA has two processes: offline (training) and online (implementation), and it is composed of two major modules: 1) a solution feasibility checker that identifies whether there is a feasible trajectory subject to all the system constraints, e.g., maximum acceleration or deceleration; and 2) a regressor to predict the speed of the next time-step. Preliminary simulation with microscopic traffic modeling software PTV VISSIM showed that the proposed DLTPA can achieve the optimal solution in terms of energy savings and a greater balance of energy savings vs. computational efforts when compared to the baseline scenarios where no EAD is implemented and the optimal solution (in terms of energy savings) is provided by a graph-based trajectory planning algorithm.
Describe Implementation of Research Outcomes (or why not implemented): Place any photos here	
Impacts/Benefits of Implementation (actual, not anticipated):	
Web Links <ul style="list-style-type: none"> • Reports • Project website 	https://ncst.ucdavis.edu/project/deep-learning-based-ecodriving-system-for-battery-electric-vehicles/ https://escholarship.org/uc/item/9fz140zt