

Torque Vectoring for Electric Vehicles

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Monday, January 31st, 2022; 10:30 - 11:30 am;

Location: In-person (SRE 367) And Virtual:

<https://ucmerced.zoom.us/j/82336999611?pwd=cWdXN3pybIRkVWNOcUJTL1V4QXBXdz09&from=addon>

Passcode: 309051

Abstract

Thanks to the advent of vehicle electrification, torque vectoring is a very interesting feature now more than ever before. Torque vectoring can be exploited in electric vehicles with multiple motors to, e.g., generate a direct yaw moment by assigning different motor torques at the left and right wheels. This allows to modify the cornering response of the vehicle based on handling and/or energy efficiency criteria. Combining torque vectoring control with reliable estimates of key vehicle states will lead to devise new active safety systems to significantly improve passenger safety. The seminar will explore this and will present experimental results obtained on full-scale electric vehicles.

Biography

Basilio Lenzo received the M.Sc. degree in mechanical engineering in 2010 (1st cum laude, University of Pisa and Sant'Anna University), and the Ph.D. degree in robotics in 2013 (1st cum laude, Sant'Anna University). He was R&D Engineer at Ferrari F1 (2010), and awardee of the MIT Young Innovators Under 35 Italy prize (2015). He was invited to give a TED talk at TEDxBergamo (2015) and TEDx Sheffield Hallam University (2019). He was Visiting Researcher with École Normale Supérieure de Cachan, Paris (France), University of Delaware, Newark (USA), Columbia University, New York (USA), University of Naples, Naples (Italy), the German Aerospace Center DLR, Weßling (Germany), Politecnico di Torino, Turin (Italy), Stanford University, Stanford (USA) as a Fulbright grantee. Since 2021, he has been a Tenure-Track Assistant Professor with the University of Padua, Italy, Department of Industrial Engineering. His research interests are in the field of vehicle dynamics, control, and state estimation. He is a member of the International Association of Vehicle System Dynamics (IAVSD). He is author of more than 50 internationally peer-reviewed papers, and editor and co-author of the Springer book "Vehicle dynamics: fundamentals and ultimate trends".

