

# Diego Locatelli

PHD STUDENT · UNIVERSITÀ DEGLI STUDI DI PAVIA

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## Education

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### Università degli studi di Pavia

Pavia, via Adolfo Ferrata 5, 27100

MASTER'S DEGREE IN INDUSTRIAL AUTOMATION ENGINEERING, 110L/110

Sep. 2017 - Sep. 2019

- **Master's thesis** "Energy management of a power-split plug-in hybrid electric vehicle based on realistic battery model "

The Toyota Hybrid System (THS) is a technology that the Japanese industry has proposed and perfected since the late nineties, with the entry into the market of the first version of the Toyota Prius. The THS configuration focuses on the operation of a planetary gear set, also called power-split. In this thesis a model of the THS is proposed, starting from zero, based on previous works in the literature. The contribution is constituted by three elements. First of all, the mechanical braking torque is added to the model, assuming that not all the kinetic energy can be recovered by the KERS (Kinetic Energy Regenerative System) during braking. Second element is the that two more complex equivalent circuit models of the battery pack are applied to the overall vehicle model. Finally, a control strategy based on a priority MPC is used to determine the optimal power split of the three vehicle motors, with the aim of reducing the consumptions. Simulations, modelling and optimization are carried out with CasADi toolbox, a powerful resource for nonlinear optimization.

### Università degli studi di Bergamo

Dalmine, via G. Marconi 5, 24044

BACHELOR'S DEGREE IN MECHANICAL ENGINEERING, 88/110

Sep. 2013 - Mar. 2017

- **Bachelor's thesis** "Analysis of a production system: the Euro Kematic s.r.l case study"

### Liceo scientifico Galileo Galilei

Caravaggio, via Francesco D'Assisi

119a, 24043

HIGH SCHOOL DIPLOMA, 80/100

Sep. 2006 - Jun. 2012

## Skills

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**Programming** Matlab, C/C++, SolidEdge, CasADi, Recurdyn, LaTeX  
**Platforms** iOS, Windows NT/2000/XP/Vista/Seven/8/10, Ubuntu  
**Languages** **Italian:** mothertongue, **English:** fluent, **French:** basic

## Experience

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### YGEA Pharmacy

Treviglio, BG, Italy

STAGIST

Jun. 2011 - Jul 2011

- Storage of medicines through industrial robot.
- Help with logistics and local accommodation tasks

### Empeira Coop. Sociale

Bergamo, Italy

TEACHER

Oct. 2014 - Jun. 2015

- Mathematics and physics teaching for students in difficulty.