

## Juan Gallego-Calderon, Ph.D.

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CONTACT INFORMATION	Gullandsgade 8, 4tv 2300 Copenhagen, Denmark	+45 81941263 jugc@dtu.dk jfgallego2@gmail.com
PROFESSIONAL SUMMARY	Over three years of research experience in the wind energy sector in the following areas: <ul style="list-style-type: none"><li>• Use of aeroelastic tool HAWC2 for computing structural loads in the 5 MW NREL reference wind turbine following the IEC 61400-1 and IEC 61400-4.</li><li>• Software development of numerical models to simulate the dynamics of a wind turbine drivetrain in order to estimate the internal loading in the components. The theoretical basis of these models are multibody dynamics.</li><li>• Use of probabilistic models in order to predict the fatigue and reliability of critical components in the wind turbine drivetrain.</li><li>• Use of wind turbine controller and generator controller, in order to couple HAWC2 with Matlab/Simulink to carry out Design Load Cases including a detailed drivetrain model.</li></ul>	
THEORETICAL BACKGROUND	<ul style="list-style-type: none"><li>• Multibody dynamics for model development and simulation of wind turbine structures.</li><li>• Control systems and system integration in wind turbines.</li><li>• Generator dynamics.</li><li>• Machinery and structural dynamics.</li></ul>	
RESEARCH EXPERIENCE	<div><b>DTU Wind Energy</b> March 2015 to present <i>Postdoc, Wind Turbine Structures section</i><ul style="list-style-type: none"><li>• Modeling of drivetrain components.</li><li>• Scripting for large quantity of batch simulations.</li><li>• Maintain and develop further the in-house drivetrain simulation tool.</li></ul></div> <div><b>DTU Wind Energy</b> March 2012 to March 2015 <i>Ph.D. student, Wind Turbine Structures section</i><ul style="list-style-type: none"><li>• Authored, developed and implemented a software capable of simulating the electromechanical drivetrain interaction.</li><li>• Assisted in the development of the drivetrain test facilities at Ris DTU Campus.</li></ul></div> <div><b>National Renewable Energy Laboratory (NREL)</b> March 2014 to June 2014 <i>Visiting Ph.D. student, National Wind Technology Center</i><ul style="list-style-type: none"><li>• Validation of drivetrain models using experimental and field data, based on load measurements.</li></ul></div>	
EDUCATION	<div><b>Technical University of Denmark</b>, Lyngby, Denmark, Ph.D., Wind Energy, August 2015 Thesis Topic: <i>Electromechanical Drivetrain Simulation</i> Advisors: Anand Natarajan, Ph.D, Nicolaos Antonion Cutululis, Ph.D, Kim Branner, Ph.D, and John Michael Hansen, Ph.D</div> <div><b>California State University, Fresno</b>, Fresno, CA, M.S., Electrical Engineering, Decemeber 2011</div>	

Topic: *Efficient Drives for Single-phase AC Motors: Analysis and Applications*  
Advisor: Nagy Bengiamin, Ph.D

**Pontificia Universidad Javeriana**, Santiago de Cali, Valle del Cauca, Colombia  
B.S., Electronics Engineering, October 2007

SKILLS

Programming languages/software

Matlab, Simulink, HAWC2, LabView, Python, git, Microsoft Office, C, Campbell  
Scientific instrumentation and L<sup>A</sup>T<sub>E</sub>X.

Hardware

Electric machines, power conversion, electric circuits, micro-controllers and DAQs.

Languages

English – Fluent.

Danish – Basic.

Spanish – Native speaker.

REFEREED  
JOURNAL  
PUBLICATIONS

**Gallego-Calderon, J.**, and Natarajan A. (2015) “Assessment of Wind Turbine  
Drive-train Fatigue Loads Under Torsional Excitation.” *Engineering Structures*, 103,  
189–202.

**J. Gallego-Calderon**, A. Natarajan and N. Dimitrov (2015). “Effects of bearing  
configuration in wind turbine gearbox reliability..” *Energy Procedia*, 80: 392–400.

**Gallego-Calderon, J.** and Bengiamin, N. (2013) “Efficient Drives for Single-phase  
AC Motors: Analysis and Applications.” *International Journal of Modern Engineering*,  
13(2):25–33.

JOURNAL PAPERS  
IN PREPARATION

**Gallego-Calderon, J.**, Natarajan A and Cutululis, N. “Ultimate design load analysis  
of gearbox bearings under extreme loading.” *Under review by Wind Energy, September  
2015.*

CONFERENCE  
PAPERS

**J. Gallego-Calderon**, K. Branner, A. Natarajan, N. Cutululis and J. Hansen.  
“Electromechanical Drivetrain Simulation.” *9th PhD Seminar on Wind Energy in  
Europe*, Gotland, Sweden, 2013.