

# CHARILAOS MYLONAS

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<https://mylonasc.github.io/aboutme>

## EDUCATION

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SEPT. 2016 – PRESENT	<b>ETH Zürich</b> <i>Ph.D. in Machine Learning &amp; Generative Modelling for Wind Energy</i>
SEPT. 2012 – SEPT. 2015	<b>ETH Zürich</b> <i>M.Sc. in Computational Science and Engineering</i> <i>Thesis: Shape Optimization with Boundary Elements</i>
SEPT. 2005 – MAY 2012	<b>Aristotle University of Thessaloniki</b> <i>Dipl. Ing. Civil Engineering</i> <i>Focus on Structural Engineering</i>

## WORK EXPERIENCE

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SEPT 2016 – PRESENT	<b>ETH Zürich</b> <i>Ph.D. Candidate / Research Assistant</i> <ul style="list-style-type: none"><li>· Defined and implemented novel applications of GraphNets to localization with arbitrarily positioned sensors, remaining useful life prediction and wind farm wake interactions</li><li>· Employed deep generative models to model operational conditions of wind farms and blade damage accumulation</li><li>· Contributed to OpenFAST wind turbine and wind farm simulation software</li><li>· Created a graph networks library (<a href="https://github.com/mylonasc/tf-gnns/">https://github.com/mylonasc/tf-gnns/</a>)</li></ul>
DEC. 2015–SEPT. 2016	<b>ETH Zürich</b> <i>Research Assistant</i> <ul style="list-style-type: none"><li>· Implemented and tested automated hyper-parameter tuning and training strategies for a CP-tensor decomposed regression module</li><li>· Implemented numerical construction of orthogonal polynomials w.r.t. arbitrary probability measures</li><li>· Developed unit tests for various algorithms maintained existing ones.</li></ul>
JUL 2014 – DEC 2014	<b>Credit Suisse</b> <i>Full-Stack Software Developer (internship)</i> <ul style="list-style-type: none"><li>· Implemented and validated in C++ an R interface for an option pricer, replacing pre-existing text-based one (more than 10-fold performance improvement)</li><li>· Implemented a REST-API server and an interactive web GUI</li><li>· Implemented a web-based script editor for a domain specific language for sharing of time series processing pipelines and visualizations.</li><li>· Developed unit tests &amp; benchmarks for the created code, including automated inter-commit benchmarking scripts</li></ul>

## TECHNICAL STRENGTHS

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<b>Programming</b>	Python, Matlab, R, Java, JavaScript, C++ (working knowledge) Linux shell scripting
<b>SW Development Experience</b>	Scientific Computing (FEM/FVM/BEM/Particle Methods), Machine learning algorithms Test-driven development, Full-stack web development, Design patterns & Software design
<b>Other relevant skills</b>	Distributed/parallel Computing (OpenMP, MPI), Large dataset creation and processing, Custom web-based tools for model performance inspection and comparison. Fast and self-driven learner and creative problem solver

## OTHER INFORMATION

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### Teaching and Thesis Supervision

- High Performance Computing for Computational Science and Engineering (2020) (Prof. O. Schenk)
- Method of Finite Elements (2017 – 2019) (Prof. E. Chatzi)
- Linear Algebra Lab (2008) (Prof. Chara Charalambous)
- *Student project supervision* 6 M.Sc. theses and Semester projects, 2 ongoing, and consulted on several others (during Ph.D. studies)
- *Reviewer assignments* for Mechanical Systems and Signal Processing and Journal of Sound and Vibration

### Scholarships and Certificates

- *Human Subject Research Certificate* (Data or Specimens Only) CITI-Program Training (April 2020)
- *SIAM Gene Golub Scholarship* for Ph.D. Summer school on “*High-Performance Data Analytics*” Aussois, France 2019 (competitive selection procedure)

## SELECTED PUBLICATIONS

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<b>January 2021</b>	<i>Mylonas C., I. Abdallah, and E. Chatzi (2020)</i> Conditional Variational Autoencoders for Probabilistic Wind Turbine Blade Fatigue Damage Equivalent Load Estimation using SCADA data,(To appear in Wind Energy, Wiley)
<b>December 2020</b>	<i>Mylonas C., Tsialiamanis G., Worden K. and Chatzi E. N.</i> Bayesian graph neural networks for strain-based crack localization. <i>arXiv preprint arXiv:2012.06791, 2020</i>
<b>November 2020</b>	<i>Mylonas C., &amp; Chatzi E.</i> Remaining Useful Life Estimation Under Uncertainty with Causal GraphNets. <i>arXiv preprint arXiv:2011.11740, 2020</i>
<b>January 2020</b>	<i>Mylonas, C. and Chatzi, E.</i> Deep CNNs and Adversarial Regularization for Fatigue Damage Failure Prediction of Concrete Anchors <i>3rd general assembly of the Swiss Community for Computational Methods in Applied Sciences (SWISSCOMMAS)</i>
<b>January 2019</b>	<i>Mylonas, C., Abdallah, I., &amp; Chatzi, E. N. (2020).</i> Deep Unsupervised Learning For Condition Monitoring and Prediction of High Dimensional Data with Application on Windfarm SCADA Data. <i>In Model Validation and Uncertainty Quantification, Volume 3 (pp. 189-196). Springer, Cham.</i>
<b>May 2017</b>	Konakli K., <i>Mylonas C.</i> , Marelli S., Sudret B. UQLab User Manual - Canonical low-rank approximations <i>Report UQLab-V1.0-108, Chair of Risk, Safety &amp; Uncertainty Quantification, ETH Zurich, 2017.</i>

## PERSONAL INTERESTS

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Electronics & Microcontrollers, Guitar	Human-computer interfaces Behavioral Evolution	Interactive Digital Art Psychology
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