CHARILAOS MYLONAS

🌐 http://mylonasc.xyz   ⌨ https://github.com/mylonasc
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Work Experience

SEPT 2016–SEPT 2021	**ETH Zürich** *PhD Researcher* · Research on applications of scalable probabilistic machine learning for structural condition monitoring of wind turbines and wind farms (Python, TensorFlow) · Implemented and open sourced a message-passing Graph Neural Networks (GNNs) library (https://github.com/mylonasc/tf-gnns/) · Performed large–scale Monte–Carlo simulations (Bash, cluster computing) · Proposed and implemented novel applications that fuse stochastic gradient variational Bayes and GNNs · Engaged in industrial collaboration (raw data curation, deep learning for remaining useful life prediction)
DEC 2015–SEPT 2016	**ETH Zürich** *Research Assistant* · Implemented and tested automated hyper-parameter tuning and training strategies for a CP-tensor decomposed regression module (Matlab) · Implemented and tested several algorithms related to uncertainty quantification · Authored technical reports and documentation · Developed a full-stack proof-of-concept web interface to sensitivity analysis and regression module (PHP, JavaScript, Matlab)
JUL 2014–DEC 2014	**Credit Suisse** *Full-Stack Software Developer (internship)* · Implemented and validated a high level interface for an option pricer, achieved more than 10-fold improvement by replacing pre-existing interface (C++, R) · Implemented a REST server to retrieve data from a time series database and an interactive web GUI for time series visualization (Python, JavaScript, MySQL) · Implemented a web-based script editor for an internal domain specific language for sharing time series processing pipelines and visualizations · Developed unit tests & benchmarks, including automated inter-commit benchmarking scripts (Python)

Education

SEPT 2016 – SEPT 2021	**ETH Zürich** PhD in MACHINE LEARNING FOR STRUCTURAL HEALTH MONITORING UNDER UNCERTAINTY Advisor: Prof. Eleni Chatzi
SEPT 2012 – SEPT 2015	**ETH Zürich** MSc in COMPUTATIONAL SCIENCE AND ENGINEERING Specialization: Computational Electromagnetics Thesis: *Shape Optimization with Boundary Elements* Advisor: Prof. Ralf Hiptmair
SEPT 2005 – MAY 2012	**Aristotle University of Thessaloniki** MSc CIVIL ENGINEERING Thesis: *Computational Homogenization for Composites With the Finite Elements* Implementation in COMSOL and FreeFem++

Technical Strengths

Programming Languages	Python, Matlab, R	●●●●●●
	C++, Java	●●●●○○,
	JavaScript, SQL	●●●○○○
Other software development skills	Bash, Linux, Git, Classical ML Algorithms, Scientific Computing, Software Design, Full–Stack Web Development, High Performance Computing (parallel/distributed), OpenCV, microcontroller programming	
Deep learning	Probabilistic Generative Models (GANs/VAEs/Normalizing flows), Graph Neural Networks. Personal projects on CV and NLP.	

Other information

Teaching assistant roles
· High Performance Computing for CSE (C++, OpenMP) (2020) (Prof. O. Schenk)
· Method of Finite Elements (Matlab) (2017 – 2019) (Prof. E. Chatzi)
· Linear Algebra Lab (2008) (Prof. C. Charalambous)

Other academic engagement
· *Student project supervision* 6 MSc theses and semester projects and consulted on several others
· *Reviewer assignments* for Mechanical Systems and Signal Processing and Journal of Sound and Vibration

Distinctions and Certificates
· **Best paper award** in 39th IMAC conference (Feb. 2021) for the paper "*On an application of graph neural networks in population based SHM*"
· *Human Subject Reseach Certificate* (Data or Specimens Only) CITI-Program Training (April 2020)
· **SIAM Gene Golub Scholarship** for PhD summer school on "*High-Performance Data Analytics*" *Aussois, France 2019*

Selected Publications

May 2021	***Mylonas, C.***, *Abdallah, I., Chatzi, E.* Relational VAE: A Continuous Latent Variable Model for Graph Structured Data (`https://arxiv.org/abs/2106.16049`) under review, NeurIPS 2021
February 2021	***Mylonas, C.***, *Abdallah, I., Chatzi, E.* Conditional variational autoencoders for probabilistic wind turbine blade fatigue estimation using SCADA data. Wind Energy. 2021; 1- 18. https://doi.org/10.1002/we.2621
December 2020	***Mylonas, C.***, *Tsialiamanis, G., Worden, K. and Chatzi, E.* Bayesian graph neural networks for strain-based crack localization. arXiv:2012.06791 *to appear in 39th IMAC conference proc.*
	Tsialiamanis G., ***Mylonas C.***, *Chatzi E., Wagg, D.J., Dervilis N., Worden, K.* On an application of graph neural networks in population based SHM arXiv:2103.03655 (*to appear in 39th IMAC conference proceedings*)
November 2020	***Mylonas C.*** *& Chatzi E.* Remaining Useful Life Estimation Under Uncertainty with Causal GraphNets. *arXiv preprint arXiv:2011.11740, 2020*
	Lai, Z., ***Mylonas, C.***, *Nagarajaiah, S. and Chatzi, E., 2021.* Structural identification with physics-informed neural ordinary differential equations. Journal of Sound and Vibration, 508, p.116196.
January 2019	***Mylonas, C.***, *Abdallah, I., & Chatzi, E. N. (2020).* Deep Unsupervised Learning For Condition Monitoring and Prediction of High Dimensional Data with Application on Windfarm SCADA Data. *In Model Validation and Uncertainty Quantification, Volume 3 (pp. 189-196). Springer, Cham.*
May 2017	Konakli K., ***Mylonas C.***, Marelli S., Sudret B. UQlab User Manual - Canonical low-rank approximations *Report UQLab-V1.0-108, Chair of Risk, Safety & Uncertainty Quantification, ETH Zurich, 2017.*

Personal Interests

Electronics & Microcontrollers	Deep Learning in Art	Guitar playing	Neuroscience & AI