

# Alessandro Marin, PhD

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[Online CV](#)  
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## STATEMENT OF QUALIFICATIONS

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Physicist working as Head Engineer at Oslo University in scientific software development and research support. Qualified by 4 years of corporate experience as support specialist in Analytics and 7 years of doctoral and post-doctoral academic experience in physics. Proficient in software development (back- and front-end), technical support, education research projects, machine learning. I am interested in leveraging my skills for a role in software development and support of scientific researchers in the field of science education.

## PROFESSIONAL EXPERIENCE

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JOB	<b>Head Engineer - Research Assistant</b>	December 2018 – Present
EMPLOYER	<b>University of Oslo</b>	Oslo, Norway
	Software development and machine learning in science education projects.	
TASKS	<ul style="list-style-type: none"><li>• Created software infrastructure for the S-Assess project aimed at developing a structured assessment system</li><li>• Submitted for peer review a physics education study based on machine learning</li><li>• Responsible for the development of the DocOnce document processing system</li><li>• Providing staff support in data analysis and computational infrastructure</li></ul>	
JOB	<b>Support Specialist</b>	May 2014 – August 2018
EMPLOYER	<b>InterSystems Corporation</b>	Cambridge, MA
	Technical support for InterSystems' platform for analytics.	
OUTCOMES	<ul style="list-style-type: none"><li>• Provided customer and developer support by solving technical issues (about 450)</li><li>• Developed and improved analytical models, architecture, and computing performance for analytics software</li><li>• Administered computational infrastructure and data</li><li>• Development of applications using front- and back-end technology</li></ul>	
JOB	<b>Postdoctoral Scientist</b>	September 2011 – June 2013
EMPLOYER	<b>Delft University of Technology</b>	Delft, the Netherlands
	Investigated molecular electronic processes in organic semiconductors.	
OUTCOMES	<ul style="list-style-type: none"><li>• Developed a model of spectroscopic data to extract rates of charge yields</li><li>• Implemented LabVIEW software for laser systems</li></ul>	
JOB	<b>Ph.D. in Biophysics of Photosynthesis</b>	April 2006 – June 2011
EMPLOYER	<b>Vrije Universiteit</b>	Amsterdam, the Netherlands
	Researched the transport of light energy in plant and algal photosynthesis.	
OUTCOMES	<ul style="list-style-type: none"><li>• Performed modeling of spectroscopic data on high-performance servers</li><li>• Developed MATLAB software for data processing</li><li>• Co-developer of the C (LabWindows) software for a laser detector. Set up real-time instrument control and digital data processing at high-repetition rates</li><li>• Published 6 peer-reviewed publications (4 first author) in academic journals</li></ul>	

PROJECT	<b>Master Thesis in Hearing Research</b>	August 2004 – June 2005
UNIVERSITY	<b>Karolinska Institute</b>	Stockholm, Sweden
	Researched cochlear mechanics.	
OUTCOMES	<ul style="list-style-type: none"> <li>• Preprocessed movies of the cochlea with wavelet denoising and deconvolution</li> <li>• Invented and developed a MATLAB algorithm that uses optical flow to couple a simulation of cochlear movement to microscopic movies</li> <li>• Published a peer reviewed publication in an academic journal</li> </ul>	

## EDUCATION

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STUDY	<b>PhD in Biophysics of Photosynthesis</b>	April 2006 – April 2012
UNIVERSITY	<b>Vrije Universiteit</b>	Amsterdam, the Netherlands
	Full time research in biophysics of photosynthesis on the EU funded project Harvest.	
STUDY	<b>BSc in Physics, MSc in Applied Physics</b>	September 1999 – November 2005
UNIVERSITY	<b>University of Padova</b>	Padova, Italy
	<b>Karolinska Institute</b>	Stockholm, Sweden
	Bachelor and Master in Physics at University of Padova.	
	Master thesis in Biophysics of the cochlea at Karolinska Institutet.	
STUDY	<b>Bachelor of Music, Piano</b>	September 2001 – June 2004
INSTITUTION	<b>Conservatory of Music Benedetto Marcello</b>	Venice, Italy
	3 years piano, 1 year composition.	

## PROGRAMMING LANGUAGES

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- **Software development:** Python, ObjectScript, Java, ShellScript (Bash), LabVIEW, C (LabWindows/CVI)
- **Website development:** React, Angular, NodeJS, HTML/CSS/Javascript (jQuery, D3, amCharts, Bootstrap), Django, REST
- **Data analysis:** Python and MATLAB
- **Machine learning:** Python (gensim, NLTK, scikit-learn, SciPy, etc.)
- **Databases:** MongoDB, Firebase, AWS, Caché SQL, PostgreSQL, MySQL, SQLite
- **Version control software:** Git, Perforce

## SOFTWARE DEVELOPMENT PROJECTS

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- [Canvas LMS data export](#): Software infrastructure for the S-Assess project at UiO
- [PERC\\_TopicModel](#): Topic Modeling on Physics Education Research Conference Proceedings
- [PyPuma](#): Translated scientific software for computational biology into Python
- [PyPanda](#): Optimized a method for modeling transcriptional networks in Python
- [Machine Learning Notebooks](#): Machine Learning projects presented in Jupyter notebooks
- [Zero Waste Locator](#): MEAN (MongoDB, Express, Angular CLI, Node.js) app
- [Djangoresume](#): Django-based online resume
- [Firebase-React-BoardGameGeek](#): Site based on React and Firebase
- [InterSystems](#): Miscellaneous projects using InterSystems' technologies

## SKILLS

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- **Staff support:** technical troubleshooting using problem solving theory
- **Data analytics:** diagnosing data and architectural issues to ensure optimal computational performance
- **Machine learning:** natural language processing, regression, classification/clustering, dimensionality reduction, neural networks, deep learning, time series analysis, web scraping, etc.
- **Teamwork:** launched and supported research projects resulting in 9 academic publications
- **Education and teaching:** mentored a new hire and BSc and MSc students, who completed their projects on time and to high standards. Two years as teaching assistant in the “Applied Informatics for Medical Students” course
- **Scientific/Technical writing:** published 5 first-authored academic publications, as well as 12 technical articles for InterSystems’ developer community
- **Communication:** 16 presentations at international conferences, including a hands-on session to the HuLAR network supporting technical infrastructure at UiO

## CERTIFICATES

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- **Oracle Certified Associate:** Java SE 8 Programmer
- **MIT Professional Education Program:** Certificate for the “Data Science: Data to Insights” online course on Data Science and Machine Learning
- **Online courses:** Certificates (Coursera, Lynda) on software development and data science
- **Norwegian language:** Upper intermediate part 1 - Høyere mellomnivå del 1 (B2)

## LANGUAGES

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<b>Italian</b>	Native proficiency	<b>Dutch</b>	Full professional proficiency
<b>English</b>	Full professional proficiency	<b>French</b>	Limited working proficiency
<b>Norwegian</b>	Professional working proficiency (Høyere nivå, trinn IV)	<b>Spanish</b>	Limited working proficiency

## PUBLICATIONS

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- Odden TOB†, **Marin A**†, Caballero MD. Thematic Analysis of 18 Years of PERC Proceedings using Natural Language Processing. *arXiv* and submitted to *Physical Review Physics Education Research*, 2020. [Link](#)
  - Kuijjer ML, Fagny M, **Marin A**, Quackenbush J, Glass K. PUMA: PANDA Using MicroRNA Associations. *BioRxiv* and in revision in *Bioinformatics*, 2020. [Link](#)
  - **Marin A**, van Stokkum IH, Novoderezhkin VI, van Grondelle R. Excitation-induced polarization decay in the plant light-harvesting complex LHCII. *Journal of Photochemistry and Photobiology, A: Chemistry*, 2012, 234:91-99. [Link](#)
  - **Marin A**, Doust AB, Scholes GD, Wilk KE, Curmi PMG, van Stokkum IHM, van Grondelle R. Flow of excitation energy in the cryptophyte light-harvesting antenna phycocyanin 645. *Biophysical Journal*, 2011, 101:1004-1013. [Link](#)
  - Novoderezhkin VI, **Marin A**, van Grondelle R. Intra- and inter-monomeric transfers in the light harvesting LHCII complex: the Redfield-Förster picture. *Physical Chemistry Chemical Physics*, 2011, 13(38):17093-103. [Link](#)
  - **Marin A**, Passarini F, van Stokkum IH, Croce R, van Grondelle R. Minor complexes at work: light-harvesting by Carotenoids in the Photosystem II antenna complexes CP24 and CP26. *Biophysical Journal*, 2011, 100(11):2829-2838. [Link](#)
  - Gall A, Berera R, Alexandre MTA, Pascal AA, Bordes L, Mendes-Pinto MM, Andrianambinintso S, Stoitchkova KV, **Marin A**, Valkunas L, Horton P, Kennis JTM, van Grondelle R, Ruban A, Robert B. Molecular adaptation of photoprotection: Triplet states in light-harvesting proteins. *Biophysical Journal*, 2011, 101(4):934-942. [Link](#)
  - **Marin A**, Passarini F, Croce R, van Grondelle R. The energy transfer pathways in the CP24 and CP26 antenna complexes of higher plant Photosystem II. A comparative study. *Biophysical Journal*, 2010, 99:4056-4065. [Link](#)
  - Boutet de Monvel J, **Marin A**, Jacob S, Tomo I, von Tiedemann M, Fridberger A, Ulfendahl M, Steele CR. From cochlear kinematics to cochlear mechanics: matching model to experiments. *Otol Jpn*, 2007, 16(2):76-84. [Link](#)
- † Shared first authorship