

Simone De Camillis

I am a physicist with expertise in imaging technologies, statistical analysis of data, cartography and GIS scripting. What brings together my diverse fields of experience is the passion to solve challenges through modelling and data-driven solutions.

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Professional Experience

Research Fellow / Optical specialist

Jan 2021 – Present (Australian National University)



Responsibilities:

- Conceptualise, design, test, and document optical techniques for advanced imaging.
- Identify and contribute to process optimisation and opportunities for system improvement.
- Engage with commercial partners and stakeholders by providing regular reports and presentations.
- Contribute to project development proposing innovative and effective solutions.

Achievements:

- Modelled the imaging distortions and implemented effective calibration algorithms.
- Developed Python modules to produce automated visualisations of 3D data in Paraview.
- Successfully deployed and maintained six scanning systems overseas.
- Coordinated the laboratory relocation, effectively improving the organisation of resources.

Research Fellow

Jan 2019 – Jan 2021 (Macquarie University) [cnbplegacy.org.au/imaging]



Responsibilities:

- Leading research projects on super-resolution microscopy.
- Writing scientific publications and grant proposal to support my team's research.
- Working collaboratively with material scientists and biologists to develop novel nanoprobes.

Achievements:

- Successfully implemented numerical algorithms in Python to enhance the imaging resolution.
- Developed image processing and numerical analysis to quantify instrument performance.

Instrumentation Engineer

Jan 2018 – Dec 2018 (CEA Centre, Paris-Saclay, France)



Responsibilities:

- Conduct performance analysis of optical systems, including detectors and sensors.
- Collaborate with cross-disciplinary teams to develop and validate opto-mechanical instrumentation.
- Prepare detailed documentation of experimental procedures, results, and system specifications.

Achievements:

- Produced numerical simulations of the imaging system to validate design specifications.
- Assisted with the technical aspects of a postgraduate research project within the required timeline.

R&D Engineer

Jan 2017 – Dec 2017 (General Electric, UK)



Responsibilities:

- Investigate and implement product developments in gas sensing.
- Leverage expertise to provide technical support within the wider engineering team.
- Recommend new technologies to improve system performance and reliability.

Achievements:

- Studied the performance of alternative sensors, demonstrating their intrinsic limitations through data analysis and theoretical models.
- Identified field-data correlations and develop a correction algorithm enhancing product accuracy.

Open-source Development

NSW/ACT topographic maps

Jan 2024 – Feb 2025, repository: github.com/sdecamillis/qgis_nsw_act_topo

Achievements:

- Developed a Python module for the automated generation of customised topographic maps in QGIS.

Skills

Analysis

- Geospatial: geometry manipulation, spatial relationship, data filtering, custom symbology and labelling, Model Builder.
- Statistics: multivariate analysis, hypothesis testing, principal component analysis, regression analysis, image classification.
- Modelling: nonlinear systems, finite-element analysis.
- Signal processing: time-frequency analysis, filtering techniques, feature extraction.

Programming

- Geographic Information Systems: QGIS, ArcGIS Pro.
- Data analysis: Python, MATLAB, C, Fortran.
- 3D visualisation: Python, Paraview, ImageJ.
- Editing: Latex, Office.
- Project management: Jira, Confluence.

Communication

- 15 peer-reviewed papers published in international journals (see ORCID profile).
- 6 talk/poster presentations at international conferences.
- Teaching the postgraduate class Advanced Imaging Methods and Systems (PHYS8721, ANU, 2021-2023).

Leadership

- Management of the SmartLight optical laboratories.
- Head researcher for projects on microscopy and spectroscopy.

Recent Professional Development

May 2025	GIS Analysis for Research (ANU GIS401) delivered by the ANU
Apr 2025	ArcGIS Pro (ANU GIS400) delivered by the ANU
Apr 2025	Awareness of the Australasian Inter-Service Incident Management System (VU23310) delivered by the ACT Emergency Services Agency.
Mar 2025	Regression in Machine Learning delivered by the Queensland Cyber Infrastructure Foundation (QCIF).

Education

Oct 2013 – June 2017	Doctor of Philosophy (Ph.D.) in Optical Physics <i>Queen's University Belfast, UK.</i>
Oct 2010 – July 2013	Master of Science in Plasma and Condensed Matter Physics <i>University of Pisa, Italy.</i>
Oct 2008 – July 2010	Bachelor of Science) in Physics <i>University of Pisa, Italy.</i>

Volunteering

Mar 2023 - Present	Rivers ACTSES Unit – Active member / Deputy Training Officer <ul style="list-style-type: none">➤ Participating to the emergency response for storm and water damage and rescue events.➤ Coordinating the training activities of the Unit, in line with the needs of the members.➤ Planning orienteering activities to enhance navigation skills within the Unit.
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