COSIMO ARNESANO

Ramona, CA 92065   (949) 378-4962 · cosimo.arnesano@gmail.com

___

PROFILE

- 15 years combined research and engineering experience in fluorescence microscopy and spectroscopy, Raman and near-infrared (NIR) spectroscopy, fluorescence lifetime imaging (FLIM), tissue optics and optical system designs, data analytics and modeling.
- Strong teamwork skills developed through collaborations in multidisciplinary projects with other scientists and industry engineers.
- Skilled at adapting presentations to various audiences from beginners to experts.
- Strong teaching experience in undergraduate and graduate courses in Statistics, Machine Learning, Data Mining, Analytics and Financial Modeling, Project and Operations Management.
- Experienced in managing and training on the use of equipment in academic and clinical settings.

EDUCATION

University of Southern California (USC), Center for Excellence in Teaching – Los Angeles, CA   **November 2018**
Future Faculty Teaching Institute Certificate

University of Southern California (USC), Marshall School of Business – Los Angeles, CA   **May 2018**
Master of Business Administration; Certificates in Business Analytics and Optimization and Supply Chain Management
- *Honors: Dean's Honor List,* GPA: 3.8
- *Membership*: Marshall Data Analytics Club, High Tech Association, Marshall Consulting and Strategy Club

University of California, Irvine – Irvine, CA   **May 2013**
Doctor of Philosophy in Biomedical Engineering; Major: Optics, Microscopy and Spectroscopy, Tissue Imaging
- *Honors:* GPA: 4.0/4.0; University of California Graduate Fellowship.
- *Thesis title:* Living in a digital world: features and application of FPGA in photon detection.
- *Thesis topic:* Development of novel instrumentation for optical tissue imaging that optimizes photon detection.
- *Advisor:* Professor Enrico Gratton.

University of Rome, Tor Vergata – Rome, Italy   **July 2012**
Doctor of Philosophy in Energy and Environmental Engineering; Major: Alternative Energies and medical diagnosis
- *Honors:* GPA: 4.0/4.0; University Scholarship.
- *Thesis title:* Deep tissue vibrational spectroscopy for medical diagnosis.
- *Thesis topic:* Development of novel instrumentation and technology for non-invasive medical diagnosis using Raman spectroscopy.
- *Advisors:* Professors Fabio Gori, Enrico Gratton, and Nicola Rosato.

University of California, Irvine – Irvine, CA   **December 2009**
Master of Science in Biomedical Engineering
- *Honors:* GPA: 4.0/4.0; University of California Graduate Fellowship.
- *Major topics covered: Optical microscopy and spectroscopy of biological systems, medical diagnosis, applied engineering mathematics, human physiology modeling, tissue engineering.*
- *Advisor:* Professor Enrico Gratton.

University of Rome, Tor Vergata – Rome, Italy   **May 2006**
Master of Science in Medical Engineering; Major: Electromagnetism and its effects on human body
- *Honors:* GPA: 110/110 Magna cum Laude.
- *Thesis title:* Implantable antennas for wireless biometry.
- *Thesis topic:* Development of implantable devises for non-invasively monitoring functional human body parameters.
- *Advisors:* Professor Gaetano Marrocco.

University of Rome, Tor Vergata – Rome, Italy **November 2003**
Bachelor of Science in Industrial Engineering
- *Honors:* GPA: 110/110 Magna cum Laude.
- *Thesis title/Practicum:* Working experience at the Department of Biomedical Engineering of the Tor Vergata Medical Center in Rome.
- *Thesis topic:* Medical instrumentation management and application of lasers in ophthalmology.
- *Advisors:* Professor Nicola Rosato.

EXPERIENCE

Thermo Fisher Scientific – Carlsbad, CA
Portfolio and Corporate Strategy Manager **2020 – present**
- Responsible for driving strategy and portfolio management initiatives for the Biosciences Division

Carl Zeiss Microscopy – San Diego, CA
Account Manager – Research Microscopy Solutions **2019 – 2020**
- Managing the entire Zeiss microscopy portfolio for academic and scientific institutions

University of Southern California (USC) – Los Angeles, CA
Adjunct Professor – Department of Data Sciences and Operations, USC Marshall School of Business **2019 – present**
- Teaching undergraduate and graduate courses:
  - DSO 528: Data Warehousing, Business Intelligence, and Data Mining (Graduate)
  - DSO 547: Designing Spreadsheet-based Business Models (Graduate)
  - DSO 536: Monte Carlo Simulation and Decision Models (Graduate)
  - FBE 545: Applied Financial Modeling (Graduate)
  - BUAD 315x: Basic of Project and Operations Management for Non-Majors (Undergraduate)
  - BISC 305g: Statistics for Biological Sciences (Undergraduate)
  - DSO 580: Project Management (Graduate)

Lecturer/Tutor **2016 – 2019**
- Instructor in undergraduate and graduate courses for engineering, medical, and business students
- Designed and teach a class on biophotonics applied to the field of biological sciences
  - BISC 499 – Microscopy and Spectroscopy of Biological Systems
- Co-instructor/Tutor of several classes on statistics principles and applications to marketing, finance, and other business fields
  - GSBA 506 - Applied Managerial Statistics
  - GSBA 524 - Data and Decision Models
  - GSBA 511 - Microeconomics for Management
  - FBE 543 - Forecasting and Risk Analysis
  - FBE 506 - Quantitative Methods in Finance
- Invited lecturer on engineering and medical courses
  - MASC 350L: Nanostructured Materials: Design, Synthesis, and Processing
  - SCRM 522: Biological Imaging in Stem Cell Research

Research Associate-Director of Imaging Services **2013 – 2019**
- Developed a novel endoscopic system capable to perform metabolic imaging in lungs as part of key personnel in $1.8M Department of Defense funded project.
- Managed the Advanced Light Microscopy Core Facility featuring confocal and multiphoton microscopes, super-resolution microscopes, light sheet microscopes and spectroscopy systems.
- Designed and developed a Frequency-Domain Fluorescence Lifetime Imaging setup coupled with a 2-Photon microscope to perform metabolic imaging in living tissues.
- Trained hundreds of students, scientists and industry representatives every year on microscopy and spectroscopy instrumentation.
- Carried out multidisciplinary collaborations with Keck School of Medicine, Molecular and Computational Biology, and Biomedical Engineering departments at USC to better understand stem cell and cancer mechanisms and develop novel instrumentation for non-invasive early diagnosis.
- Acquired, analyzed, and processed Hyper-Spectral (Hy-Sp) Imaging and Fluorescence Lifetime Imaging (FLIM) data of tissue metabolism using the Phasor approach to fluorescence imaging.

University of California, Irvine – Irvine, CA
Biomedical Engineer/Research Scientist   **2009 – 2014**
- Trained and supervised hundreds of students, scientists and engineers from UC Irvine, other institutions, universities, and companies using microscopy and spectroscopy systems
- Designed and built a novel non-invasive instrument based on diffuse optical spectroscopy for breast cancer early diagnosis, and tissue-like phantoms for tissue optics instrumentation testing
- Programmed, tested, and validated Field Programmable Gate Arrays (FPGAs) for the acquisitions of photons in a multidisciplinary team involved in developing a faster and more efficient acquisition method to detect photons

Instructor   **2009 – 2014**
- Lecturer for the workshop in Advanced Fluorescence Imaging and Dynamics
- Tutor for the Undergraduate Student Initiative for Biomedical Research (USIBR) program

Esaote S.p.A. – Tor Vergata Medical Center, Rome, Italy
Biomedical Engineer   **2008 – 2008**
- Managed and tested electrical safety of more than 10,000 medical devices within the Tor Vergata Medical Center
- Designed and developed an inventory system based on Microsoft Excel to keep track of every change happening in the Medical Center instrumentation portfolio

SELECTED SCIENTIFIC PUBLICATIONS AND PRESENTATIONS

- **Arnesano, C**, *"Digital Parallel Frequency-Domain Spectroscopy for Tissue Imaging"* Optics within life sciences 2012, Genova, Italy ORAL PRESENTATION
- **Arnesano, C**, Santoro, Y, and Gratton, E*, "Digital Parallel Frequency-Domain Spectroscopy for Tissue Imaging" Journal of biomedical optics 17 (9) 2012*
- Gratton, E, Digman, MA, Stringari, **C, Arnesano**, C, *"Digital Parallel Acquisition in Frequency Domain for the Characterization of Tissue Spatial Heterogeneities" Biophysical Journal 102 (3), 591a 2012*
- Gratton, E, Digman, MA, Stringari, C, **Arnesano, C**, *"FLIM Phasor Analysis for Time-Domain and Frequency-Domain Data" Biophysical Journal 104 (2), 347a 2013*
- **Arnesano, C**, D'Amico, E, Digman, MA, Gratton, E, *"Measurements of Fluorescence Decay Times by the Digital Parallel Frequency-Domain Method (FLIMbox)" Biophysical Journal 104 (2), 347a 2013*
- Browne AW, **Arnesano C**, Harutyunyan N, et al. "*Structural and functional characterization of human stem-cell-derived retinal organoids by live imaging*". Invest Ophthalmol Vis Sci. 2017; 58:3311–3318.
- Sadybekov, A., Tian, C., **Arnesano, C**. *et al.* "*An autism spectrum disorder-related de novo mutation hotspot discovered in the GEF1 domain of Trio*". *Nat Commun* **8,** 601 (2017) doi:10.1038/s41467-017-00472-0
- Li, Y, Junge, JA, **Arnesano, C**, Gross, GG, Miner, JH, Moats, R, Roberts, RW, Arnold, DB, Fraser, SE, *"Discs large 1 maintains daughter cell polarity after cytokinesis in vertebrate morphogenesis"* PNAS November 13, 2018 115 (46) E10859-E10868
- P Wang, G Turcatel, **C Arnesano**, D Warburton, SE Fraser, F Cutrale, "Fiber pattern removal and image reconstruction method for snapshot mosaic hyperspectral endoscopic images", Biomedical optics express 9 (2), 780-790, 2018
- Zhou, H., Nguyen, L., **Arnesano, C**., Ando, Y., Raval, M., Rodgers, J.T, Fraser, S., Lu, R., Shen, K., Non-invasive optical biomarkers distinguish and track the metabolic status of single hematopoietic stem cells, *ISCIENCE* (2020), doi: https://doi.org/10.1016/j.isci.2020.100831
- Shi, W., Koo, D., Kitano, M., Chiang, H.-J., Trinh, L., Turcatel, G., Steventon, B., **Arnesano, C**., Warburton, D., Fraser, S., Cutrale, F. "*Pre-processing visualization of hyperspectral fluorescent data with Spectrally Encoded Enhanced Representations (SEER)*", *Nat Commun* **11,** 726 (2020).

AWARDS AND FELLOWSHIPS

- UC IRVINE Graduate Division Fellowship, UC Irvine   **2008 – 2013**
- OWLS 2012 International fellowship, Genova, Italy   **2012**
- Innovative Clinical Engineering Solutions award, Dept. of Biomedical Engineering, UC Irvine   **2011**
- 7th Annual Coherent Raman Scattering Microscopy Workshop Fellowship, Harvard University   **2010**

ADDITIONAL INFORMATION

- *Software skills*: JMP, EViews, R, Matlab, Advanced Microsoft Excel and PowerPoint, SAS, Tableau, Verilog, VHDL
- *Hardware skills*: FPGA prototyping (familiar with Xilinx Spartan 3E and Spartan 6 family) and relative computer-aided developmental tool ISE (Xilinx).
- *Languages*: Italian (native), English (fully professional proficient), Spanish (limited working proficient)