

RAFAEL ANDRÉS CAMACHO DEJAY

Date of birth: 31st January 1988 | Venezuelan with residency in Belgium
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SUMMARY OF QUALIFICATIONS

7+ years of research experience focusing on advanced microscopy methods and software development. I have been involved in highly interdisciplinary teams, working within the fields of physics, chemistry and biology. I enjoy developing software for image processing and data analytics/visualization. I have built excellent communication skills by presenting complex ideas to broad audiences in international conferences, and group meetings.

PROFESSIONAL EXPERIENCE

POSTDOCTORAL RESEARCHER | KU LEUVEN | *November 2014 - present*

- Design & development of a microscope for 3D super-resolution imaging:
 - + CAD based design of mechanical components.
 - + Software for automated hardware control (Java - Micromanager).
- Study of bacterial growth, survival and death by antibiotics using microscopy methods and image analysis software for shape recognition and classification.
 - + Image segmentation/binarization.
 - + Shape descriptors and machine learning for discrimination and classification (MATLAB).
- Simulations of physical systems.
 - + Light absorption and energy transfer. Monte Carlo based methods.
 - + Synthetic image generation – fluorescence images, EMCCD, sCMOS.
 - + Particle diffusion and localization.
- Development of software tools for:
 - + Next-generation DNA sequencing – e.g. clustering methods.
 - + Single molecule detection/tracking – e.g. generalized likelihood ratio test.
 - + Intensity traces – e.g. change point detection via Bayes hypothesis testing, or nonlinear filtering methods.
 - + Super-resolution imaging – e.g. FFT, phasors, and image registration.
- Project management and supervision of bachelor, master and PhD students.
- Instructor and organizer of a programming course for young researchers.
- Successful grants: 3-year postdoctoral fellowship (Research Foundation Flanders); 1-year fellowship (Internal funds KU Leuven).

POSTDOCTORAL RESEARCHER | LUND UNIVERSITY | *July 2014 - October 2014*

- Detection of protein aggregation related to Alzheimer's disease – FRET by fluorescence resonance energy transfer imaging.
 - + In charge of project management and establishing long lasting collaborations with researches within life sciences.

PHD CANDIDATE & RESEARCHER | LUND UNIVERSITY | *May 2010 - June 2014*

- Construction of a polarization sensitive fluorescence microscope with single molecule precision.
 - + Hardware prototyping and software integration (LabView/MATLAB)
- Design of graphical user interfaces for data acquisition and analysis.
 - + Basic parallel computing for image analysis (Python).
- Training in value creation and patent application for life sciences.
- Single molecule spectroscopy and imaging methods for the study of material with potential use in nano and molecular electronics.
- Nominated to the Fabian Gyllenbergs prize.

EDUCATION

PHD IN THE SUBJECT OF CHEMISTRY | LUND UNIVERSITY, SWEDEN | 2014

- Specialization in Chemical Physics and single molecule spectroscopy.

MASTER OF SCIENCE IN CHEMISTRY <Licenciado en Química> | SIMÓN BOLÍVAR UNIVERSITY, VENEZUELA | 2010

- Graduated with *cum laude* distinction.
- Honourable mention on Final Project.

SKILLS AND TRAINING

PROGRAMMING

- Data handling and processing using MATLAB and Python.
- Familiar with OpenCV, Magick++, and other image processing libraries.
- Moderate experience with C++.
- Automated hardware control using LabVIEW, Micromanager, and Java.
- Object-oriented programming and Model-View-Controller architecture.

GitHub and Bitbucket username: CamachoDejay.

ENGINEERING & DESIGN

- Strong background in Physics, Chemistry and Mathematics.
- Optical and fluorescence microscopy and super-resolution imaging, e.g. FRET, Light-Sheet, Two-Photon, STORM, SOFI, etc.
- Hands-on experience with state-of-the-art microscopy equipment from Nikon, Olympus, Zeiss and Leica.
- Construction of home-build microscopy and spectroscopy setups.
- Characterization of materials at the nano-scale.
- Experimental skills with bio-organisms, chemicals and lab equipment.
- Moderate experience in 3D Computer-Aided Design (CAD).

LANGUAGES

- Spanish: Native
- English: Excellent
- French: Intermediate and improving
- Swedish: Elementary

OTHER EXPERIENCE

- Martial arts practitioner (Aikido, Judo), since 2010.
- Rock climbing, hiking, and other outdoor activities.
- Chess player and assistant coach, 1997-2007.
- Cross country running, tennis, football and several other team sports.

PRESENTATIONS AND PUBLICATIONS

PRESENTATIONS

- Oral presentations in 5 international conferences since 2011.
- Poster presentation in 3 international conferences since 2011.
- Constant oral presentations during group meetings.

PUBLICATIONS IN PEER-REVIEWED INTERNATIONAL JOURNALS

- 16 publications in international journals including Nano letters, ACS nano, Journal of the American Chemical Society, Scientific Reports, etc, being cited more than 250 times since 2013 and having a h-index of 9.
- Full publication list can be found at:
https://www.researchgate.net/profile/Rafael_Camacho2

WEBSITE

More information about my research and teaching activities can be found at:
<https://camachodejay.github.io/>
