

Nicolas Comte

PHD – R&D ENGINEER · COMPUTER SCIENCE AND MODELING

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Experience

Inria (Grenoble-Alpes, team Morpheo), Anatoscope, Université Grenoble-Alpes

Grenoble (France)

R&D ENGINEER - PH.D STUDENT

2019 - 2023

- Research and industrial collaboration between Inria (Grenoble-Alpes, team Morpheo), Anatoscope and Grenoble Hospitals
- Thesis title: *Learning Scoliosis Patterns using Anatomical Models and Motion Capture*
- Development of new methods for analyzing spinal deformations through 3D imaging and motion capture.
- Involvement in industrial projects in anatomical simulations and reconstructions.

Inria (French Institute for Research in Computer Science and Automation)

Lyon (France)

R&D ENGINEER

2016 - 2018

- Creation of [Treerecs](#) and contribution to [Seaview](#), a multi-plateform and graphical user interface for bioinformatics.
- Integration and improvements of existing algorithms.
- Implementation of tests, continuous integration.
- Co-supervision of interns on software design.
- Teaching programming at INSA Lyon (48 cumulated hours), Bioinformatics and modelling studies (third year).

Inria • Soladis

Lyon (France)

INTERNSHIPS

2015-2016

- 2016 (6 months), research in computational biology: creation of a model for the artificial evolution platform [Aevol](#) at Inria, research team Beagle.
- 2015 (4 months), statistician: statistics and design of R packages with writing of a manual about R programming (180 pages) at Soladis.

Team INSA-Lyon, IGEN 2014 competition

Lyon (France) ; Boston (USA)

COMPUTATIONAL BIOLOGIST

2014

- The IGEN (for *International Genetically Engineered Machine*) is an international competition of synthetic biology organized in Boston. With our project [Curly'on](#), we designed a bio-filter heavy-metals-specific which is generated by genetically modified bacteria.
- Creation of simulation tools, data analysis and modelling of molecular interactions. See our project [Curly'On](#).
- Awards : *Gold Medal* and *Best Composite Part*

Formation

Université Grenobles Alpes

Grenoble (France)

PH.D IN COMPUTER SCIENCE

2020-2023

- Programming • Machine learning • Medical imaging • Anatomical simulation • Biomechanics • Computer vision and graphics

INSA Lyon

Lyon (France)

INSA ENGINEER, BIOINFORMATICS AND MODELING STUDIES

2013-2016

- Programming • Data mining • Computational biology • Image processing • Statistics • Biology

University of Lyon

Lyon (France)

BACHELOR IN COMPUTATIONAL BIOLOGY

2010-2013

- Bioinformatics • Programming • Statistics • Mathematical modeling • Biology

Skills

Programming C++, Python, Cython, Sofa, R, SAS, SQL, Git

Computer sciences Deep learning, Computer vision, Computer graphics, Statistics, Anatomical simulation, Computational biology

Communication \LaTeX , HTML, Markdown, Inkscape, Gimp, Krita, Blender

Miscellaneous Driving licence category B

Languages French (mother tongue), English

Interests

Science communication in DéMesures (association)

Lyon (France)

LABORATORY OF YOUNG RESEARCHERS FOR SCIENTIFIC POPULARIZATION AND COMMUNICATION.

2017-2019

- Projects of communication between scientists and artists: ArtScience 2018 (Lyon, France)
- Scientific popularization events: "Fête de la Science" 2017 and 2018 (Villeurbanne, France) ; Geek Touch 2018 (Lyon, France)

Staff in scientific events

Lyon, France

- R MEETING, 2013

2013, 2017

- ECAL (*European Conference in Artificial Life*), 2017

Others

DRAWING, DIGITAL PAINTING, WILDLIFE PHOTOGRAPHY, PROGRAMMING

Awards

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|------|---|----------------|
| 2023 | Best Poster in medical imaging , IABM - <i>French symposium in Artificial Intelligence in Biomedical Imaging</i> | Paris (France) |
| 2014 | Gold Medal and Best Composite Part , IGEM - <i>International Genetically Engineered Machine competition</i> | Boston (USA) |

Scientific contribution

ABSTRACTS IN CONFERENCES (ORALS AND POSTERS)

3D inference of the scoliotic spine from depth maps of the back

N. COMTE, S. PUJADES, A. COURVOISIER, O. DANIEL, J.-S. FRANCO, F. FAURE, E. BOYER

2023

CMBBE - International Symposium on Computer Methods in Biomechanics and Biomedical Engineering

Multi-modal registration for Adolescent Idiopathic Scoliosis subject specific avatar creation

N. COMTE, S. PUJADES, A. COURVOISIER, O. DANIEL, J.-S. FRANCO, F. FAURE, E. BOYER

2023

CMBBE - International Symposium on Computer Methods in Biomechanics and Biomedical Engineering

Inference 3D du rachis depuis une carte de profondeur du dos

N. COMTE, S. PUJADES, A. COURVOISIER, O. DANIEL, J.-S. FRANCO, F. FAURE, E. BOYER

2023

IABM - Colloque Français en Intelligence Artificielle en Imagerie Médicale

Aevol-4b: Toward a new simulation platform to benchmark phylogenetic tools

N. COMTE, V. LIARD, C. KNIBBE & G. BESLON

2017

ALPHY (ALignments and PHYlogeny)

A 4-base model for the Aevol in-silico experimental evolution platform

V. LIARD, J. ROUZAUD-CORNABAS, N. COMTE & G. BESLON

2017

European Conference on Artificial Life

PUBLICATIONS

3D inference of the scoliotic spine from depth maps of the back

N. COMTE, S. PUJADES, A. COURVOISIER, O. DANIEL, J.-S. FRANCO, F. FAURE, E. BOYER

2023

HAL, preprint

Multi-Modal Data Correspondence for the 4D Analysis of the Spine with Adolescent Idiopathic Scoliosis

N. COMTE, S. PUJADES, A. COURVOISIER, O. DANIEL, J.-S. FRANCO, F. FAURE, E. BOYER

2023

Bioengineering, MDPI, Impact Factor: 4.6

Seaview Version 5: A Multiplatform Software for Multiple Sequence Alignment, Molecular Phylogenetic Analyses, and Tree Reconciliation

M. GOUY, E. TANNIER, N. COMTE, D.P. PARSONS

2021

Multiple Sequence Alignment: Methods and Protocols, Springer Protocols (Book)

Treerecs: an integrated phylogenetic tool, from sequences to reconciliations

N. COMTE, B. MOREL, D. HASIC, L. GUÉGUEN, B. BOUSSAU, V. DAUBIN, S. PENEL, C. SCORNAVACCA, M. GOUY, A.

STAMATAKIS, E. TANNIER, D.P. PARSONS

Bioinformatics, Oxford University Press (OUP), Impact Factor: 5.8

2020

RecPhyloXML: a format for reconciled gene trees

W. DUCHEMIN, G. GENGE, A.-M. ARIGON CHIFOLLEAU, L. ARVESTAD, M. S. BANSAL, V. BERRY, B. BOUSSAU, F.

CHEVENET, N. COMTE, A. A. DAVÍN, C. DESSIMOZ, D. DYLUS, D. HASIC, D. MALLO, R. PLANEL, D. POSADA, C.

SCORNAVACCA, G. SZÖLLŐSI, L. ZHANG, E. TANNIER, V. DAUBIN

Bioinformatics, Oxford University Press (OUP), Impact Factor: 5.8

2018