

Chrysovalantou Kalaitzidou

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Basic Information

- **Full Name:** Chrysovalantou Kalaitzidou
- **Date of Birth:** 05 March, 1991
- **Place of Birth:** Stuttgart, Germany
- **Nationality:** Greek

Education

MSc. Bioinformatics

School of Medicine

Thesis theme: Modeling and Simulation of Deformation Localization in Fibrous Extracellular Matrix induced by Contractile Fibroblasts.

University of Crete

10/2016 - to date

BSc. Applied Mathematics

Mathematics and Applied Mathematics Department

Specialisation: Mathematical Modeling and Computer Simulation

University of Crete

09/2008 - 08/2016

Detailed Timeline

- 09/2008-06/2009: B.Sc. degree (enrollment)
- 07/2009-08/2011: B.Sc. studies interruption and work in hometown (needed to support family)
- 09/2011-09/2015: B.Sc. degree continuation
- 10/2015-03/2016: Internship in Nürnberg, Germany
- 10/2016- to date: MSc. studies

Work Experience

Computational Biology Lab, IMBB FORTH

Assistant Researcher

Main project: Constructing a model to automatically characterize UP and DDOWN states in the prefrontal cortex from experimental data analysis.

Heraklion, Greece

07/2017-12/2017

inuTech GmbH

Apprentice Software Developer, Erasmus Internship

Main project: The problem of the microstructure of magnetic materials

Nürnberg, Germany

10/2015-03/2016

In particular:

- Studying and implementing Numerical Methods For Ordinary and Partial Differential Equations
- Studying C++ programming language
- Developing software using the C++ programming language for the resolution of fundamental problems for the main project

Technical skills

- **Programming:** Python, R, Bash, Good knowledge of C/C++
- **Scientific tools:** RStudio, familiarity with MATLAB, Octave, ParaView
- **Web Technologies:** HTML, CSS, PHP, JavaScript
- **Database management systems:** MySQL
- **Other:** LaTeX, MS Office, LibreOffice

Software Development Tools

Implementation *from scratch* of the following tools, in Python programming language.

- **Principal Component Analysis package:** Implementation of dimensionality reduction algorithms. In particular:
 - Linear PCA
 - Probabilistic PCA
 - Kernel PCA
- **Clustering package:** Implementation of clustering algorithms:
 - k-Means
 - Mixture of Gaussians
- **Classification package:** Implementation of two classifiers:
 - k Nearest Neighbours, k-rn
 - Naive Bayes

Major curricular topics

- **Methods in Bioinformatics-Machine Learning:**
 - Dimensionality reduction techniques
 - Unsupervised Learning : Clustering
 - Supervised Learning : Classification, Regression
 - Feature Selection
 - Model Selection
 - Causality
- **Algorithms in Bioinformatics:**
 - Sequence Alignment
 - Motifs: Search, Evaluation and Discover
 - Analyzing Sequence Composition
 - Algorithms inspired by NGS problems (mapping, peak finding & differential expression)
- **Statistics**
- **Biological Imaging Systems, Analysis and Image Processing**
- **Mathematical and Numerical Modeling of Biological Problems**
- **Numerical Solution of Ordinary and Partial Differential Equations**
- **Continuum Mechanics**
- **Molecular & Cellular Biology**

Conferences & seminars

Dendrites 2018

EMBO Workshop

Dendritic anatomy, molecules and function

Heraklion GR

June 17-20, 2018

Hellenic Bioinformatics 10

Foundation for Research & Technology Hellas, FORTH

Bioinformatics and its applications in Health, Biodiversity and the Environment

Heraklion GR

September, 2017

Hellenic Bioinformatics 09

Center for Research & Technology Hellas, CERTH

Bioinformatics as a growth engine for Greece

Thessaloniki GR

November, 2016

International Conference on Applied Mathematics
Archimedes Center for Modeling, Analysis & Computation, ACMAC

Heraklion GR
September 16-20, 2013

Kinetic Description of Multiscale Phenomena
Archimedes Center for Modeling, Analysis & Computation, ACMAC

Heraklion GR
June 17-28, 2013

Research Interests

- Computational Biology
- Uncertainty quantification
- Applications of Machine Learning
- Biological Data Analysis

Honors and awards

Sports achievement: Participated in local and national Swimming Games.

- Several times Champion in semi National (North Greece) Senior Games
- 10th place in National Senior Games, Athens Olympic Aquatic Centre 2005

Languages

Greek: Native language
English: Working proficiency
German: Basic proficiency

Activities

- Attended *Creative Writing* literature courses for two years
- Member of the Students' Representative Council of the Applied Mathematics Department of the University of Crete for the academic year 2013-2014
- Member of the Theatrical Group of the University of Crete, participated in the play "*Le Petit Prince*" by Antoine de Saint-Exupery