Marie-Félicia Beclin

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PhD

University of Montpellier, Montpellier, France 10/2021 — 11/2024 (Expected)
PhD Project : Statistical analysis of thoracic computed tomography scanner in case of asthma patient treated by Benralizumab

The objective is to ascertain its efficacy of Benralizumab, a medication to treat asthma. The different steps of the project consist of :

- CT Scan segmentation (with two separate techniques : by theresholding with ITK and by neural network "Lungmask") and B-spline registration between inspiration and expiration
- Computation of histogram in 1D and in 2D
- Computation of the PRM, parametric response map
- Bibliography and study on regression distribution on distribution (Optimal transport, Frechet regression)

Talks and Conferences

- Marie-Félicia Beclin, Pierre Lafaye de Micheaux, Nicolas Molinari, **Regression Models for Quantile Function Data Applied to CT-Scans of Asthmatic Patients**, IMS International Conference on Statistics and Data Science, December 18-21, 2023, Lisbon, Portugal- 20 minutes talk item Marie-Félicia Beclin, Pierre Lafaye de Micheaux, Nicolas Molinari, **Regression Models for Quantile Function Data Applied to CT-Scans of Asthmatic Patients** Séminaire statistique imag , Decembre 2023
- Seminaire IDESP December 2023
- Marie-Félicia Beclin, Pierre Lafaye de Micheaux, Nicolas Molinari, **Using Quantile Regression to Predict and Quantify some Treatment's Response from Medical Images** "Conférence IA et Santé", Nantes, 2022

On going work

Marie-Félicia Beclin, Pierre Lafaye de Micheaux, Nicolas Molinari, **A Linear Regression Model for quantile Function Data Applied to Paired Pulmonary 3D CT Scans**, Statistics in Medecine

Teaching
Université de Montpellier

- Algebra License 1 (Vector space, linear applications) Probability Life Science License (Probability on a finite universe, binomial distribution, conditional probabilities)
- Polytech Prep First Year: Algebra (Vector space, linear applications, bases, determinant, Gaussian pivot, Riemann integral)
- Polytech Prep Second Year: Analysis (Sequences and Series of functions,)

Lycée La Merci - Montpellier

- Oral interview math : "Khôlle" , MP , 2023-2024

EDUCATION

Mines ParisTech,, Paris, France 2017

- Information system management
- Hardware and software architectures
- Introduction to artificial intelligence
- Image Processing

Mines Saint-Etienne, Saint-Etienne, France 2015-2017

- Majeur Data Sciences (Optimisation, Statistics,machine learning, R and Python coding)
- Options : Functional Equations and Geometry - High Performance Calculations - Image Processing

Université Jean Monnet,Saint-Etienne, France 2015
L3-Mathematiques in parallelle with engineering cursus

Lycée Louis Le Grand,Paris, France 2015-2013
*Prep school - MPSI-MP** (Maths, Physics and engeneering sciences)

Lycée Paul Hazard,Armentières, France 2013
Baccalauréat Scientific with honours (Mention Très Bien)

WORK EXPERIENCE

B12 Consulting - Louvain-La-Neuve, Belgium
Analyst developper 2020

- Data sciences' project (Python , Pandas, Numpy, Scikit-Learn)
- Back-end Development (Python - Django et Django REST) et Front - end (Typescript - React)

Engie - Louvain-La-Neuve, Belgium
Data Scientist Junior 2017 – 2019

- Internship's project : Study and detection of the wake effect on wind farms using data science algorithms
  - 1. Bibliographic research on the wake
  - 2. Exploration and analysis of data (weather and performance data on wind farm)
  - 3. Determination and implementation of a model
  - 4. Validation of the model / Tools used: Python, Pandas, Numpy, Scikit-Learn
- Data science projects - Studies of degradation rates of solar panels and inverters - Python Scikit-learn / Pandas
- Creation of an automation tool for downloading documents relating to calls for tenders - Python / Selenium

SKILLS

Languages French (mother tongue) , English

Computer Science Python (Pandas, Numpy, scikit-learn, ITK, SimpleITK), R, LateX, Unix, Git

Medical Image processing (Segmentation, registration)