BANTISOULI AGATHI

Heraklion Crete • agathibantisouli@gmail.com • bantisouli@iacm.forth.gr • linkedin.com/in/abantisouli
• (+30)6948329646

~~~~~~

Personal Statement: Ambitious young scientist with a solid background in machine learning, data analysis and applied mathematics. Experienced in hyperspectral data analysis and remote sensing, I aim to leverage my skills to address complex environmental challenges.

Education

University of Crete — **Heraklion, Sep. 2020 – Sep. 2024**

BSc in Mathematics. Grade: 7.32 / 10.

Relevant courses: Wave Propagation, Applied Mathematics, Parametric Statistics, Digital Signal Processing, Numerical Analysis, Numerical Solution of Ordinary Differential Equations, Python I & II.

Experience

Teaching Assistant — Heraklion

Python course, University of Crete — Jan. 2023 – June 2023

• Supervised approximately 30 undergraduate students in conducting exercises
• Checking student's individual assignments on Python

Internship — Heraklion

Remote Sensing Lab, Foundation for Research and Technology – Hellas (FORTH) — May 2024 – July 2024

• Support of hyperspectral measurements in the city of Heraklion, using both a field spectroradiometer and a hyperspectral camera
• Analysis of hyperspectral data and training of Machine Learning algorithms of RSLab
• Implementation of the above algorithms in satellite imagery classification

Representative of Undergraduate Studies — Heraklion

Quality Assurance Unit (MO.DI.P.), University of Crete — Sep. 2021 – Sep. 2022

• Cooperation with administrative bodies, teaching staff, and administrative staff to serve the interests of the students
• Submission of proposals to the Management Council and the Senate, for the formation of the educational and research strategy of university
• Selection as one of two representatives from the entire University of Crete

Management & Customer Service — Larisa Prefecture

Traditional cafe "Premier" – Family business — 2018 – Today

• Customer service and store management

Projects

Internship project, "Spectral Data Analysis and Hyperspectral Image Classification Using Support Vector Machines and Convolutional Neural Networks" — June 2024 - July 2024

• Collection of spectra and creation of a spectral library from materials
• Training of support vector machines using hyperspectral data
• Visualization of results using the QGIS software
• Opening a hyperspectral image with the rasterio library and converting it to an array (Python)
• Creation of a suitable training set for the neural network (train_test_split from sklearn.model_selection, to_categorical from tensorflow.keras.utils) using Python
• Creation and training a Convolutional Neural Network (CNN) model (seaborn, layers, models and regularizes from tensorflow.keras, gaussian_filter from scipy.ndimage) using Python
• Application of the CNN model over the same hyperspectral image
• Visual comparison of results

Group project in Education in Digital Technologies, "Time Series Forecast on Stock Prices" — June 2023 - July 2023

• Offered by CE-LLC and designed for individuals who have already obtained a degree
• Retrieval of data via the yfinance library (Python)
• Data analysis using exponential moving average (EMA) or simple moving average (SMA)
• Creating a Prophet model

Project on course Wave Propagation — Feb. 2024 - June 2024

• Calculation of eigenvalues and corresponding eigenfunctions in waveguides using Python
• Calculation of Transmission Loss
• Visualization of results using the matplotlib library
~~~~~~

BANTISOULI AGATHI

Projects on course Numerical Solution of Ordinary Differential Equations Sep. 2023 - Jan. 2023

• Numerical solution of initial value problems and systems with Euler (simple / complex), Tableau (simple / complex), Simpson, Average, Fixed Point, Runge-Kutta, Adams Bashforth (2), Adams Multon (2), Prediction – Correction methods using Python

• Calculation of order of accuracy

Projects on course Numerical Analysis Feb. 2022 - June 2022

• Solving non-linear equations with Newton-Raphson, Bisection, Intersection methods using Python

• Iterative methods for solving linear equations: Jacobi, Gauss-Seidel using Python

• Polynomial Interpolation (splines), Types of numerical integration using Python

Projects on course Digital Signal Processing Sep. 2023 - Dec. 2023

• Calculation of Period, Energy and Power of signals, Correlation of signals with suitable functions (NumPy, matplotlib) using Python

• Error correction in digital images (.tif) with moving average filter and median filter (mpimg.imread, imshow from matplotlib), Signal denoising (scipy.io, SciPy.Signal, Audio from IPython.display), Telephone number detection by designing a bandpass filter system using Python

• Group delay in all-pass systems (pezw2, scipy.io), zero phase filtering (SciPy.Signal), Notch filter design and electrocardiogram denoising (ECGmake), Minimum phase systems in telecommunications using Python

• Design of IIR Filters through the Analog Space with techniques: Impulse Invariance - Based Butterworth Filter and Bilinear Transform - Based Butterworth Filter, Design of FIR Filters (cont2discrete, freqz, group_delay, bilinear from SciPy.Signal and defaultdict from collections) using Python

Courses

"Education in Digital Technologies" by CE-LLC of the University of Crete

"Quality Assurance in Higher Education" by TUV HELLAS

"Introduction to Web Development with HTML5, CSS3, JavaScript" by Mathesis

"Integrative Education – Special Education & Parallel Support" by Employ Edu

Volunteering

Volunteer Heraklion

TEDx University of Crete volunteer at this event May 2023

• Supervision of people during workshops and public service

Volunteer Larisa Prefecture

Cultural Association of Chalki Larisa 2015 - 2018

• Team Leader in a foreign dance group, during festivals and public service

Skills and Interests

Techniques: Imagery Classification, Regression, Forecasting, Python, LaTeX, Word, Excel, PowerPoint, Libraries: sklearn.model_selection, tensorflow.keras.utils, seaborn, scipy.ndimage, yfinance, NumPy, matplotlib, SciPy, SciPy.Signal, IPython.display, ECGmake, collections

Foreign Languages: English B2, Spanish B1

Interests: QGIS, C, MATLAB, Mechanical Design, Dance, Music