Mariana Villamil

Curriculum Vitae

Personal information

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GitHub profile	`github.com/MarianaVillamilSastre`

Professional profile

Physicist and Geoscientist with strong interest in astronomy, planetary sciences and geophysics. I have solid experience doing scientific research using different programming languages and Machine Learning techniques.I am skilled person with capacities for interdisciplinary group work and changing work environments, creative and innovative with a vocation to teach and passion to learn.

Education

2020 **BSc. in Geosciences**, Universidad de los Andes, Bogotá, Colombia.
Thesis work: Episodic thermal convection in Enceladus Ice shell.
Supervisor Dr. Jillian Pearse.

2019 **BSc. in Physics**, Universidad de los Andes, Bogotá, Colombia.
Thesis work: Spectroscopy of rocky bodies of the Solar system: The Moon and Mars.
Supervisor Dr. Alejandro García.

Research experience

2019 **Spectroscopy of rocky bodies of the Solar system: The Moon and Mars**, *(Thesis in Physics)*, The objective was to identify the spectral signatures of the rock-forming minerals from the Moon and Mars with spectral data obtained at the astronomical observatory at University of Los Andes.

Machine learning research project: Neural networks for recognizing impact craters in other planets with Mars satellite images, In this study,we implemented a supervised machine learning algorithm (neural networks) to classify meteorite impacts on planetary surfaces. **Advisor: Dr. Jean Baptiste Tary**.

Experimental project: Characterization of the brightness of the sky in the zenith direction in Bogota city, The brightness of the Bogotá city sky was studied with light sensors placed in residential areas. The statistical trend that follows the Bogotá sky was analyzed taking into account the meteorological conditions. **Advisor: Dr. Alejandro García**.

2018 **Episodic thermal convection in Enceladus Ice shell**, *(Thesis in Geosciences)*, The objective was to run simulations in 2D/3D in order to study the heat behavior on the icy moon crust.

Professional courses

2018 **Astronomy, Astrometry, Astrophysics and Astrostatistics summer school**, University of Los Andes.

2017 **Seismic interpretation course - Practical part**, European Association of Geoscientist and Engineers (EAGE).

Seismic interpretation course - Theoretical part, European Association of Geoscientist and Engineers (EAGE).

Computational skills

OS Gnu/Linux, Windows.

Specialized software IRAF, Pyraf, ArcGIS, Matlab, LaTeX, Geomatics, CitcomS

Languages C/C++, Python, P5,

Memberships

2019 **Member of the space robotics group - ROBOCOL**, Machine learning project: Neural networks for soils identification.

2016 **Member of the research group of tectonics and structural geology**, Universidad de los Andes, Bogotá, Colombia.

Member of the student group of Geothermal Energy, *European Association of Geoscientist and Engineers (EAGE)*, Bogotá, Colombia.

Selected contributed talks

2019 **European Rover Challenge**, *Competitor*, Planet partner, Kielce, Poland.

2018 **IV International conference on astrophysics & particle physics**, *Speaker*, Chicago, US.

IV International congress of astrobiology, *Speaker*, NASA Astrobiology Institute, Lima, Perú.

II Latinamerican astrobiology congress, *Speaker*, National University of Colombia. Bogotá, Colombia

2016 **III International congress of astrobiology**, *Speaker*, NASA Astrobiology Institute. Manizales, Colombia

Teaching assistant experience at the University of Los Andes

2019 **Solid state physics and condensed matter**, *Physics Department*.

2018-2019 **Center for Science Success**, *Science Faculty*.

Problem Clinic, *Physics Department*.

2018 **Advanced seismology**, *Geosciences Department*.

Remote Sensing, SIG and GPS, *Geosciences Department* .

Introduction to observational astronomy, *Physics Department*.

Languages

Spanish Native

English Fluent

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