Jasmine M. Khalil

Astrophysics Research Assistant | Cairo University
Space and Astronomy Freelance Writer | Porfolio
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Education

Qualifying Study in Astronomy and Meteorology - **Cairo University, Giza, Egypt**

Grade: **Very Good**. Percentage: **84.567%** 2021 - 2022

BEng. Electronics and Electrical Communications - **Ain Shams University, Cairo, Egypt**

Grade: **Good** 2014 - 2019

Graduation Project: *"Water Quality Analyzer, A MEMS-based device"*. Grade: **Excellent**. Dissertation

Research Experience

Research Assistant - Cairo University, Giza, Egypt

- *Under the supervision of Dr. Al-Shaimaa Hassanin - Prof. Nahed Hassanin Lab for Solar Physics:* Aug 2022 - Present
  - Performing exploratory data analysis (EDA) using Python and the SunPy library.
- *Under the supervision of Prof. Alaa Ali:* July 2022 - Jan 2023
  - Searching for and characterizing wide multiple star systems at the center of planetary nebulae using the latest Gaia data release (DR3)
  - Applying the necessary photometry and astrometry analysis using the VOSA Analyzer

Undergraduate Researcher - Ain Shams University, Cairo, Egypt 2018 - 2019

- *Under the supervision of Prof. Diaa Khalil and Dr. Yasser M. Sabry:*
  - **MEMS Separation Devices:** Contributed to designing **M**icro **E**lectrical **M**echanical **S**ystems to separate 1μm to 10μm plastic particles using L-edit & Comsol MultiPhysics softwares as part of my graduation project in the Optics Lab.
  - **Plastic detection in Water:** Worked on detecting both plastic sheets and microplastic particles in water using Fourier Transform Infrared (FTIR) spectroscopy as part of my graduation project in the Optics Lab.

Papers Published or Under Preparation

- Ali, A., **Khalil, J.M.,** Mindil, A.: *"Detection of wide binary and multiple nuclei of planetary nebulae using the Gaia DR3."*

  Published in the **Astrophysics and Space Science Journal**, arxiv
- Hassanin, **Khalil, J.M.,** et al.: *"A study of the CME link to geomagnetic storms during 1999-2022: catalog and summary of properties."*

  Currently under preparation to be submitted to the **Solar Physics Journal**.

Technical SKILLS

Fluent Programming Languages: Python (**Libraries & Environments:** AstroPy, astrobase, SciPy, SunPy, NumPy, Pandas, Matplotlib, Jupyter Notebook, Google Colab), LaTeX

Experience with: HTML, CSS, MATLAB, C++, L-Edit, Comsol MultiPhysics, Eagle PCB Designer, Ansys Designer RF

Technologies: Astrophysics, Exploratory Data Analysis, Robotics

Environments: Windows, Linux (Ubuntu), MacOS

Workshops & Summer Schools

ASPIRE Astrophysics Summer Research Program - University of Amsterdam, NL
A six-week summer research program from June 30th to August 11th — Virtually, 2023

African Astronomical Society (AfAS) Hackathon — South Africa, 2023

Sagan Exoplanet Summer Hybrid Workshop on "Exoplanet Science in the Gaia Era"
Hosted by the NASA Exoplanet Science Institute at the California Institute of Technology in Pasadena, CA. Certificate — Virtually, 2022

Introduction to Astronomy Research, GitHub — Virtually, 2022

Presentations & Posters

- Searching for AM CVn stars using ZTF data
  - Presentation for the ASPIRE program — Online, Aug 2023
  - Poster for The advanced ArAS School for Astrophysics — Egypt, Sep 2023

Volunteering & Outreach

Women in Astronomy - IAU — 2022 - present

Stardust magazine (Astronomy Club, Ain Shams University, Cairo, Egypt):

- Editor-In-Chief: — 2019
  - Led a team of writers & editors to publish the third issue
- Writer & Editor: — 2018
  - Contributed as a writer & editor to produce the second issue

Language Proficiency

Arabic: **Mother Language** — English: **Fluent-like Proficiency**

Hands-on Projects

ISS (International Space Station) tracker: using Arduino Uno Microcontroller & 1sheeld sensors board to turn smartphones into ISS trackers. Documentation.

Smart Electrical Outlet: using a Wi-Fi module to make an electrical outlet that enables controlling appliances from afar.

Line Follower RC Car: using IR & ultrasonic sensors with Arduino Uno Microcontroller to make a small RC car that follows a specific path.

Robotic Arm using Arduino: using Arduino Uno Microcontroller & DC motors to mimic the movement of the human arm.

Selected Awards & Honours

Best Cost Optimization, "Iclub" competition, Faculty of Engineering, Ain Shams University. 2016