HERWINS KHOOSEERAZ GANGARAM

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EDUCATION

University of Mauritius **Aug. 2020 – Nov. 2023**

BSc (Hons) Physics with Computing *Reduit*

- Grade: 1st Class with Honours; GPA: 3.99; CPA: 77.7
- Dissertation title: A Theoretical and Computational Study of Gravitational Wave Modelling of Black Hole Binaries
- Dean's Honour List for two consecutive years

Royal College Port-Louis **2019**

Cambridge International AS & A Level *Port-Louis*

- Subjects: Mathematics, Physics, Chemistry, General Paper

ACHIEVEMENTS

73rd Lindau Nobel Laureates Meeting **July 2024**

Represented Mauritius as a Young Scientist *Lindau*

- Qualified in a global multi-step selection process to participate.
- Met and interacted with Nobel Laureates and young scientists across various fields.
- Supported the Mainau Declaration 2024 on Nuclear Weapons.

EXPERIENCE

Mauritius Research and Innovation Council **Mar. 2024 – Present**

Intern at Space Unit *Ebene*

- Employed machine learning techniques to perform crop delineation, which, together with earth observation satellite data, was used to monitor crop performance over a given time frame.
- Leveraged telematics data to infer vehicle density and perform speed analysis.
- Collaborated on analysis of satellite images obtained from various sources, including Mauritius's inaugural nanosatellite MIR-SAT1. Conduct in-depth studies to derive insights into sea temperature fluctuations and occurrences of algae blooms.
- Utilised advanced image processing techniques to enhance and interpret satellite data, contributing to developing a comprehensive dataset.

University of Mauritius **Jan. 2024**

Co-Organiser and Co-Tutor Python Workshop *Reduit*

- Tutored groups of undergraduate students in topics including basic data structures in Python along with the numpy and pandas modules, as well as image processing utilising the scikit-image module.

University of Mauritius **Oct. 2023 – Jan. 2024**

Research Assistant for Professor S D D V Rughooputh *Reduit*

- Created programs that utilise astronomical techniques to monitor solar and lunar patterns around Mauritius and five other locations in the Indian Ocean. Predicting times of eclipses, shadows and their impacts.

Travelling Teachers **Sept. 2021 – Present**

Math and Physics Tutor for International Baccalaureate (IB), A Levels and IGCSE *Grand Baie*

- Taught mathematics and physics in diverse classroom settings and one-on-one tutoring, accumulating over 1,000 hours of teaching experience across two years.
- Elevated student grades, securing university choices through targeted support.
- Providing guidance and support to IB students in completing internal assessment projects and extended essays.
- Effectively assisted international students facing language barriers in their transition to meet the requisite standards and fulfill high school admission requirements.
- Frequently communicated with both parents and students concerning the progress and development of the students.

University of Mauritius **Aug. 2021**

Intern and Web Developer under Professor S D D V Rughooputh *Reduit*

- Created a web-based assessment question bank for the undergraduate module of Waves and Optics I at BSc (Hons) Physics, incorporating features for progress tracking, discussion forums, and resource sharing to enhance student engagement and learning.

StudyWays Ltd **May 2021 – Aug. 2022**

Education Counsellor *Ebene*

- Assisted students with the college admissions process, acquisition of study skills, academic opportunities, and benefits.
- Conducted seminars on career counselling for high school and college students
- Develop positive relationships with students, staff, and parents.
- Travelled with workshop team in putting on 2-day seminars

PROJECTS

Analysis of Heart Rate Variability and Autocorrelation Patterns in Young and Older Subjects | *Python, MATLAB* **Aug. 2023**

- Conducted statistical tests to analyze changes in heart rate variability (HRV) patterns across different age groups.
- Employed autocorrelation analysis to identify an increased periodic behaviour in HRV with age, suggesting its potential as a health indicator.

Autocorrelation Analysis of the Bitcoin Cryptocurrency Prices | *Python, MATLAB* **July 2023**

- Collected and maintained a comprehensive dataset of daily closing prices for Bitcoin. Utilized autocorrelation analysis techniques to examine the temporal dependencies within the Bitcoin price data.
- Findings highlighted the challenges of predicting future trends solely based on historical closing prices, contributing valuable insights to the field of cryptocurrency analysis.

Fractal Analysis of the Duffing Oscillator and Transition to Chaos | *MATLAB* **June 2022**

- Generated insightful visualizations and interpreted fractal patterns to contribute to the understanding of chaotic systems and their applications in various fields of science. Provided valuable insights into nonlinear dynamics and chaos theory, demonstrating proficiency in complex mathematical modelling and analysis.

Date-Based Lunar Eclipse Detection Application | *Fortran 95* **Dec. 2021**

- Designed and developed a specialised application utilising astronomical techniques to provide users with accurate information on the type and characteristics of lunar eclipses on user-specified dates.

TECHNICAL SKILLS

Languages: Python, MATLAB, C, MATHEMATICA, LaTeX, Fortran 95
Technologies/Frameworks: Linux, GitHub

REFERENCES

Dr. Nitin Rughoonauth | *Lecturer in Theoretical Physics University of Mauritius* | Email: n.rughoonauth@uom.ac.mu