

# Shivaji Chaulagain

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Shivaji-137

## Education

<b>St. Xavier's College, Tribhuvan University(TU)</b> <i>Master of Science in Physics, 1st semester</i>	<b>Kathmandu, Nepal</b> 2025–2027
<b>St. Xavier's College</b> <i>Bachelor of Science in Physics</i> Percentage: 74.50	<b>Kathmandu, Nepal</b> 2019–2024
<b>Capital Secondary School (CCRC)</b> <i>High School</i> CGPA: 3.48	<b>Kathmandu, Nepal</b> 2016–2018

## Research Experience

<b>A Comparative Data Analysis of Gravitational Wave Signals From Binary Star Coalescences of GW170817, 190814 and GW190521</b> <i>Supervisor: Dr. Shreeram Nagarkoti, Length: 38 Pages</i>	<b>Undergraduate Thesis</b> 2024
<ul style="list-style-type: none"><li>Analyzed gravitational wave data from GW170817, GW190521, and GW190814.</li><li>Created strain data plots, ASD plots, Q-transform visualizations, match filtering, waveform generation and template matching.</li></ul>	

## Projects

<b>Github Repository.....</b>	
<b>Demonstration of Astronomical Software Tools Project</b> <a href="https://github.com/Shivaji-137/Astronomical-Software">https://github.com/Shivaji-137/Astronomical-Software</a>	
<ul style="list-style-type: none"><li>Provides a comprehensive list of software tools and libraries that are essential for astronomical research and data analysis</li></ul>	
<b>Google Scholar and arXiv Scraper</b> <i>For personal use only</i>	
<ul style="list-style-type: none"><li>command line scripts that search research articles based on author (<i>google scholar only</i>) and titles.</li><li>show research titles, citation, h-index, publication date, availability of pdf, open url in a browser, and download pdf directly from terminal without need of browser.</li><li>Implemented using Python libraries such as BeautifulSoup and requests.</li></ul>	
<b>3D Interactive Viewer for GRAND Collaboration</b> <a href="https://github.com/Shivaji-137/Grand_3D_Event_ViewerJs">https://github.com/Shivaji-137/Grand_3D_Event_ViewerJs</a>	2024–
<ul style="list-style-type: none"><li>Building a 3D interactive visualization tool for the Giant Radio Array for Neutrino Detection (GRAND) project.</li><li>Allows users to explore particle interactions and gain insights into neutrino detection from hdf5 file data.</li><li>Built my own RBF interpolation js library for performing hilbert transformation of electric field</li><li>Developed using javascript library plotly.js.</li><li>Will incorporate advanced visualization using three.js library</li></ul>	
<b>Coursera Project Network.....</b>	
<b>March 9 2024:</b> Visualizing Filters of a CNN using TensorFlow	
<b>July 31 2024:</b> Deep Learning with Pytorch: Object Localization	

## Professional Development

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### 2024 Aspire Leaders Program.....

#### The Aspire Leaders Program

Participant (online)

August 2024

- Emerged with increased self-confidence, sharpened critical thinking skills, refined communication skills, and a desire to create a social impact among a global community.

### Online Courses.....

**13-18 April 2023:** *Introduction to Quantum Computing*, St. Xavier's Physics Council (SXPC-Nepal)

**Feb 28 2024:** *Machine Learning with Python*, Coursera

**March 2 2024:** *Data Analysis with Python*, Coursera

**March 15 2024:** *Introduction to Deep Learning and Neural Networks with Keras*, Coursera

**March 2024:** *Introduction to R*, Great Learning Academy

**March 2024:** *Data Visualization with R*, Great Learning Academy

**July 28 2024:** *Advanced Learning Algorithm*, Coursera

**August 7 2024:** *OpenCV Bootcamp*, OpenCV University

**November 1 2024:** *MATLAB Onramp*, self-paced training course, MathWorks Training Services

**2024-ongoing:** *Computers, Waves, Simulations: A Practical Introduction to Numerical Methods using Python*, Ludwig-Maximilians-Universität München (Coursera)

**2024:** *Data-driven Astronomy*, The University of Sydney (coursera)

### Lectures.....

**16 May 2023:** A public talk on *Light from Darkness? Searching for Dark Matter in the Sky* by Dr. Tracy Slatyer, at Rato Bangala School, Nepal as a part of the BCVSPIN school

**24 July 2024:** *An introduction to high-energy Astro-Particle physics with an emphasis on cosmic rays and neutrinos* by Dr. Ramesh Koirala, St.Xavier's College, Kathmandu

**18 Dec 2024:** *Discovering the Radio Universe* by Dr. Kenneth Kellermann (Online)

### Seminars.....

#### ICTP Physics Without Frontiers 2023

Attendee, The Abdus Salam International Center for Theoretical Physics(ICTP) and St.

Xavier's College

9-10 August 2023

- Public talks on fundamental research in physics at the Large Hadron Collider(LHC) and the other on science communication.
- Career Sesions

### Workshops.....

**8-9 April 2023:** *Workshop on Remote Sensing in Climate Sciences (RSCS2023)*, Tribhuvan University in cooperation with UGC Nepal, St. Xavier's College, Kathmandu and Nepal Physical Sociey

**18-19 June, 2023:** Hands-on Workshop on *Latex Training*, St. Xavier's College, Kathmandu

**9-11 August 2023:** *A mini-workshop on particle physics and science communication*, St. Xavier's College in collaboration with ICTP Physics

**11-13 Oct 2023:** Workshop on Basics of *Quantum Espresso (QE)* Software, St. Xavier's College

**October 20 2023:** *XI WWlet Wavelets and Applications in Signal and PDEs (online)*, SBMAC, Brazil

**2024:** *GW Open Data Workshop, 2022*, Online

### Summer Schools.....

#### Summer School on Gravitational-Wave Astronomy

Participant-Online

1-12 July 2024

ICTS, Bengaluru, India

Courses:

- The astrophysics of neutron stars and binaries
- Ultralight boson clouds around black holes
- Rapidly spinning neutron stars and emission mechanisms
- Searches for continuous GWs: Methods and results

\*note: I could not get the certificate as per the school rules as I could not attend two sessions.

## Work and Volunteer Experience

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### Scholar's Academy School

Teacher

Sindhuli, Nepal

2019

- Taught math and science to lower secondary and secondary level students.

### Space Development Engineering

Tutor (online-tuition)

Lalitpur, Nepal

2024

- Taught BE (engineering) Math I, II, III and Physics II

### Physics Demonstration by SXPC-Nepal in Set Exhibition

Volunteer and Demonstrator

Kathmandu, Nepal

February 2, 2024

- Conducted a physics exhibition showcasing practical demonstrations of concepts such as gyroscopic precession, Chladni patterns, the Brachistochrone problem, and ferrofluid properties.
- Engaged visitors with interactive experiments and discussions, fostering public interest in physics and its interdisciplinary applications.

### The Renaissance Library

President, <https://www.facebook.com/theRenaissanceLibrary/>

Sindhuli, Nepal

2022–2024

- Established Mini library in three public places (Bhiman Hospital, Bhiman Police Area and Ward Municipality office) as 1 year plan but was extended later for another year.
- Conducted a cybersecurity awareness program in presence of field expertise as an event speaker, and class 9, 10 students of all school in Bhiman area as a target audience.

## Skills

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**Programming:** Python, R, Javascript, C, Latex(overleaf), Linux (OS)

**Data Analysis and Visualization:** Numpy, Scipy, Pandas, Matplotlib, Seaborn, plotly.js, three.js

**Astronomy Software Tools:** Familiar with DS9, Astropy, AstrolImageJ, Lightkurve, Astroquery

## Extracurricular Activities

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**12th April, 2022:** 10th Yuri's Night Celebration and Star Party, at Loyola Campus, St. Xavier's College, Maitighar, Kathmandu

**Clubs:** Active member of the Renaissance Library

## Additional Information

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**Languages:** English, Nepali, A1 level Germany (self learning)

**Interests:** Astronomy, Coding, Exploring, Hiking, Music, Teaching, Travelling, Philosophy, Poem