Dipak Kumar Yadav

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EDUCATION

St. Xavier's College **Maitighar,Kathmandu**
Candidate for Bachelor of Science degree in Physics 2020 –Present
Year: 4th
Relevant Coursework: Quantum Mechanics, Solid State and Nuclear Physics, Introduction to Elementary Particle Physics Modern Physics, Classical Mechanics, Electrodynamics, Computational Course, Differential Equation, Linear Algebra, Probability and Inference.

Lord Buddha Secondary School **Biratnagar, Morang**
High School Degree in Science 2018 - 2020
Relevant Coursework: Physics, Chemistry, Mathematics
GPA: 3.37/4.0

Super Sense Secondary English Boarding School **Dharapani, Dhanusha**
High School Degree in Science 2016 - 2017
GPA: 3.65/4.0

WORK EXPERIENCE

St. Xavier's Physics Council Nepal (SXPC-Nepal) **SXC**
Executive Representative 2022 – 2023
Treasurer 2023 - 2024

- Organized, volunteered, and coordinated events for SXPC, including Yuri's Night, Quantum Computing workshops, and various talks. Developed leadership skills and teamwork through active participation and event management.

Teacher and Private tutor for High School and Junior High **Mrigashira World School**
Teacher (Science and Mathematics) 2023-2024

- Taught Science and Mathematics, designed lesson plans, and facilitated interactive learning to enhance students' conceptual understanding. Provided academic guidance and fostered a supportive learning environment.

Private tutor (High School, physics and Mathematics) 2020-2023

- Offered personalized tutoring sessions, assisting students in mastering complex concepts in Physics and Mathematics. Focused on problem-solving techniques, critical thinking, and exam prepratiom.

SKILLS

Software Python, C, C++, Machine Learning Analysis, Monte Carlo Simulation, Geant 4, LaTeX, Canva, Microsoft PowerPoint, Quantum Espresso.

Projects Simulated quantum mechanical phenomena using Python (Harmonic oscillator and Hydrogen atom), applied machine learning models in high energy physics data analysis (Higgs events), computational solutions for complex mathematical problems, study on different materials using Quantum Espresso.

Languages English (fluent) ; Nepali (native) ; Maithili ; Hindi

WORKSHOPS, SUMMER SCHOOLS & COMPETITIONS

PLANCKS International Physics Competition **(IAPS), Dublin, Ireland**

May 2024

- Competed in an international theoretical physics contest, solving advanced problems in quantum mechanics, relativity, classical mechanics, and attended particle physics talks with experts.
- Winner of 10 Years of PLANCKS Challenge

Summer School in Theoretical (Astro)Physics (SSTP-2024) **IUCAA and St. Xavier's College Ahmedabad, India**

- Attended relativity courses and used machine learning techniques to analyze gravitational wave open-source data (GWOSC).

BCVSPIN-2024: Masterclass in Particle Physics Workshop in Machine Learning **CDP,NEPAL**

- Gained a comprehensive introduction to particle physics, high-energy physics (HEP) experiments, and machine learning. Engaged in lectures and hands-on sessions to explore core concepts and applied machine learning techniques to data from the ATLAS experiment.
- Presented(ppt) a group project on signal versus background classification for Higgs event detection.

Introduction to Quantum Computing:2023(Workshop) **SXPC-Nepal**

April 2023

- Comprehensive understanding of the fundamental concepts, principles, and applications of quantum computing; basic understanding of Qiskit and machine learning algorithms.

Quantum Espresso Basics 2023:3days (Workshop and Hands-on session) **Department of physics, SXC**

- Completed 15 hours / 1 Credits course on Basics Quantum Espresso.

COURSES AND CERTIFICATIONS

- Diploma in Quantum computing and programming. **Offered by Qworld and Qiskit**
  Instructor: Dr. Jibran Rashid, Diploma number: Qbronze115-60

- Particle Physics: An Introduction **University of Geneva, Coursera**
- Machine Learning Introduction for Everyone **IBM course, Coursera**
- Programming for Everybody (Getting Started with Python) **University of Michigan, Coursera**
  Python Data Structures **Instructor: Charles Russell Severance**

RESEARCH EXPERIENCE

• Applied machine learning algorithm and models for computational analysis of GWOS data during summer school in India SSTP-2024 and
• Undergraduate researcher. 4th year project at St. Xavier's College, on PREDICTING HIGGS BOSONS EVENTS FROM 13 Tev ATLAS DATA USING DEEP NEURAL NETWORKS.
• Report writing (Foundation of Quantum Mechanics) and research internship, ICTP PWF Nepal: Holographic Himalaya SS2 2023

INTERESTS AND ACTIVITIES

- **Research** Quantum Mechanics, Quantum computing, Quantum field theory, Particle physics , ML.
- **Sports** Basketball, Football, Table Tennis, Badminton
- **Activities** Music; Hiking; Farming; Travelling; Reading