Reyan Kumar Sapkota

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EDUCATION

INSTITUTE OF ENGINEERING, PULCHOWK CAMPUS, TRIBHUVAN UNIVERSITY. Lalitpur, Nepal.
Bachelor of Engineering (B.E.) in Civil Engineering. 2023-2027
ST. XAVIER'S COLLEGE. Maitighar, Nepal.
School Leaving Certificate (10+2). CGPA: 3.82.4.0
ST. XAVIER'S SCHOOL. Jawalakhel, Lalitpur, Nepal.
Secondary Education Examination (SEE).
CGPA: 3.95/4.0.

TECHNICAL AND RESEARCH EXPERIENCE

SEISMIC PERFORMANCE ANALYSIS OF RCC MULTISTORY STRUCTURES INCORPORATING MILSET ASIA
CARBON NANOTUBE INCORPORATING CARBON NANOTUBES REINFORCED CEMENT CONCRETE Oct 2024 – Nov 2024
AND STEEL REINFORCEMENT: COMPARATIVE STUDY
ESA 2024- Online, 7th Expo-Sciences Asia, hosted by MILSET, Kuwait.
- Numerically analyzed how using CNT-reinforced cement concrete as a matrix material rather than conventional cement concrete alters the seismic performance indicators.
- Ran a linear **Response Spectrum Analysis** on around 3 multistoried RCC structure models [using **ETABS**] and evaluated/graphically interpreted [using **Python's Matplotlib**] the magnitude of seismic performance indicators like Storey Drift, Story Displacement, Storey Stiffness.
- Presented the project virtually. Link to report, graphs, project videos, and Python scripts: https://drive.google.com/drive/folders/1XFu167y57VHzRsaWGQC5xW_vKm6hja-c?usp=drive_link

THE PROSPECT OF GREEN HYDROGEN PRODUCTION IN NEPAL Universitas Indonesia, Indonesia.
Researcher at the Asian Innovative Leadership Camp organized by the Nov 2023 – Dec 2023
Asian Universities Alliance and hosted jointly by the Universitas Indonesia and St. Louis University.
- Discussed the prospect of production of Green Hydrogen in Nepal from our surplus hydropower potential.
- Prepared a research paper under the guidance of respected Dr. Pawan Kumar Bhattarai sir.
- Gave the Leader's Pitch in the finals and won Second Position under the theme of ENERGY AND SUSTAINABILITY.

CENTRALIZED INTEROPERALEDGER HYPER-PERMISSIONED BLOCKCHAIN IBCOL, Bangladesh
Team Nepal, International Blockchain Olympiad (IBCOL), Bangladesh. Sept 2021- Oct 2021
- Proposed a Blockchain Architecture viz. Centralized Inter-Operaledger Hyper Permissioned Blockchain (CIHB) and its application in potential Blockchain-Based Digital Currency.
- Led Team Nepal to the finals of the IBCOL as a Team Captain. [This was the first participation in the Finals of the IBCOL from a Nepali team.](link)

THE PROSPECT OF INTEGRATION OF BLOCKCHAIN TECH. IN NEPAL's DIGITAL CURRENCY
Department of Physics, St. Xavier's College, Maitighar, Kathmandu. April 2021 – June 2021
- Designed a framework on how Blockchain Technology can be implemented in a prospective Digital Currency of Nepal.
- Research Paper published in the ***International Journal of Recent Research and Applied Studies, Issue 9, Volume 8.***

WORK EXPERIENCE

EDITORIAL BOARD
THE BRIDGE Dec 2023-present
- Editor for English articles in the annual Civil Engineering Students Magazine, The Bridge. The Bridge is issued annually by the Civil Engineering Students Society (CESS) Nepal - IOE Pulchowk Campus.

PART-TIME FINANCE WRITER
SHARE SANSAR Sept 2021 – Nov 2021

- Initiated and maintained an article series viz. InsideOut Series where I wrote about the topics of Finance and Economics.

TUTOR   June 2022-August 2022
- Taught the 1st Semester coursework of "C Programming [CT401]" to an undergraduate freshman student of the Institute of Engineering, Pulchowk Campus.

SKILLSET

Technical Skills: C, C++ (STL), HTML/CSS/JAVASCRIPT, React JS, Next JS, Python [Pandas, Matplotlib, Streamlit], Machine Learning [Python's SkLearn], Video Editing and Graphic Design, MS Office Suite AutoDesk AutoCAD.
Management: Teamwork | Project Management | Brainstorming | Leadership | Presentation | Verbal and Written Communication
Research and Development: Literature review | Technical Writing | Problem-solving.
Languages: Fluent in Nepali and English; TOEFL [S-28/30, R-26/30, W-22/30, L-26/30], SAT [700/800 (Evidence-Based Reading and Writing)], Conversational Proficiency in Hindi.

CAMPUS ENGAGEMENT

MATHS AND PHYSICS SOCIETY (MAPS)   IOE Pulchowk Campus
Vice Secretary.   December 2024-present
- Contributed to organizing the Inter College Tag Team Maths and Physics Olympiad 2023, National Integration Bee 2024, and The Fusion Arena [National Maths and Physics Fest 2025].

ENGINEERS WITHOUT BORDERS (PULCHOWK CHAPTER)   IOE Pulchowk Campus
Project Coordinator of the 2nd Executive Committee.   December 2024-present
- Initiated and completed 2 projects under EWB's Project Unit and organized a Research Paper Reading Session.
- Shortlisted 18 members out of 47 applicants for the Project/Research Unit.
- Actively communicating with the international and national EWB chapters for project collaborations.

PROJECTS

WEB APPLICATION PROTOTYPE ON AIR QUALITY INDEX PREDICTION, MONITORING, AND   IOE Pulchowk Campus
INFORMATION DISSEMINATION SYSTEM: MACHINE LEARNING AND   Nov 2024- Jan 2025
PYTHON-STREAMLIT-BASED APPLICATION TAILORED FOR KATHMANDU METROPOLITAN CITY
Silver Medal, National Level Ideathon organized jointly by Kathmandu Valley Leo Club and CESS-Nepal.
- Coded a web application tailored for Kathmandu Metropolitan City to predict, monitor, and disseminate information about the air quality index (AQI)
- Integrated three regression-based **machine learning models** (Random Forest Regressor, CatBoost Regressor, and Gradient Boosting Regressor) to provide accurate AQI predictions an **intuitive user interface** (UI based on **Python-Streamlit**) that allows the admin side of KMC to fetch accurate AQI predictions/visualizations, disseminate personalized recommendations/ email alerts for residents and the federal government, and allow station-wise mapping on Kathmandu Metropolitan City's map (using **Python-Folium**).
- Project Manuscript to be submitted to the Department of Environment for publication.

KNOCK PATTERN ENCRYPTION DOOR LOCK   Maitighar, Kathmandu
                                                                                                           Jan 2020 – Feb 2020
- Built a door lock system that initially stores the user-entered sequence of knocks of a particular rhythm as an array. The values were assigned to the array based on the pressure variation induced by each knock (pressure detected using Piezo Sensors). Later, to unlock the door, the user had to knock on the door with that initially stored rhythm. In short, the rhythm of the knocks was used as an equivalent of a "Password."
- **Won the Young Innovator Award** in the 3-day National Technological Festival 2020 (Grade 12) organized by the **LOCUS** in the IOE Pulchowk Campus and also won the **First Prize in the SET Exhibition at St. Xavier's College.**

VOICE ASSISTED and IOT-based SMART HOME AUTOMATION SYSTEM   Maitighar, Kathmandu
                                                                                                           Jan 2020-Feb 2020

- Built a Home Automation System prototype using (HC-05 Bluetooth module, Text to Speech API, Arduino UNO, and 5V 4 Channeled Relay Module) that allowed the user to employ voice commands to toggle functions like switching on electric appliances (e.g., LED bulbs).
- Built an IOT-based LPG detection and email notification system using Node MCU ESP8266, MQ 135 Gas Sensor, etc.
- Won the **Young Innovator Award** in the 3-day National Technological Festival 2020 organized by the LOCUS and the **First Prize in the SET Exhibition 2020** at St. Xavier's College.

PIEZO ELECTRIC SHOES   Jan 2020-Feb 2020
- Built PEIZO ELECTRIC POWER SHOES with the help of Piezo Sensors and exhibited in the SXC SET Exhibition 2019.

AN INSIGHT INTO THE USAGE OF HEMPCRETE BLOCKS IN THE MASONRY STRUCTURES   October 2023
- Pitched a video presentation on the potential usage of Hempcrete Blocks as Masonry Units in an **Intra-College Ideathon** organized by ANNFSU(Revolutionary)- Pulchowk Unit and recognized as the Joint Runner-Up in the contest.

AWARDS

Asian Innovative Leader's Camp   Universitas Indonesia
Asian Universities Alliance-Universitas Indonesia   December 2023
- Prepared a research paper on the topic, "The Prospect of Green Hydrogen Production in Nepal", gave the leader's pitch in the finals, and secured Second Position in the theme ENERGY AND SUSTAINABILITY.

International Blockchain Olympiad (IBCOL), Finalist.   October 2021

Glocal's 20Under20, Batch of 2021.   July 2021- July 2022
National Recognition, Glocal Pvt. Ltd.
- Recognized as Glocals 20Under20 under the theme of "The Early Change Makers." Out of 611 applications from Nepal, twenty teenagers were awarded recognition by Glocal Pvt. Ltd.
- Awarded with this recognition for my community involvement as the Founding Board Member of the Nepal Computer Science Alliance (NECSA).

2nd Place in the National Level Ideathon 2024, organized jointly by KVLC and CESS.   December 2024

Young Innovator Award.   Feb 2020
National Technological Festival by LOCUS (IOE PULCHOWK).
- Awarded for the projects Knock Encryption Door Lock and Voice Controlled Smart Home Automation System.
- Also, a Winner at the SXC Intra College SET Exhibition in St. Xavier's College for the same projects.

Outstanding Student Award.
St. Xavier's School, Jawalakhel, Lalitpur.   March 2018
- Recognized as the Outstanding Student Award (out of 160 students) in recognition of my academic performance during my academic year (10th Grade) at St. Xavier's School, Jawalakhel, Lalitpur.

1st Prize in the English Essay Writing Contest, Organized by the FWESS, IOE Pulchowk Campus.   March 2021
1st Prize in the Intra College Spell Bee Competition, Organized by the IOE Spotlight Club, Pulchowk Campus.   July 2023
2nd Prize in the IOE Pulchowk Chess Championship. (4.0/5 points), Organized in the IOE Pulchowk Campus.   July 2023

CERTIFICATIONS

7-day AutoCAD Training Program.   Lalitpur
Issued by the Civil Engineering Students Society – Pulchowk Campus   November 2023
ENTREPRENEURSHIP TRAINING of TRAINERS.   Jawalakhel
Issued by Provincial Center for Good Governance (Bagmati Province) and Glocal Private Limited.   May 2022

REFERENCES

Dr. Pawan Bhattarai- Mentor for the AUA-UI Asia Innovative Leader Camp, *Associate Professor (Water Resource Department)*, nepal.pawan@gmail.com