

Sarthak Aganja

Contact Details

Jhaukhel, Bhaktapur, Nepal

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Customary Fine Tuned LLM AI powered Personal site , Contact : <https://www.aganjasarthak.com.np/>

Academic Qualification

Khwopa College of Engineering, Tribhuvan University, Nepal - Bachelors (B.E.) in Civil Engineering
2016 - 2021

General to Specific courses required for Civil Engineering including Electives.

Elective I-**Rock Engineering** , Elective II- **Rock Slope Engineering** , Elective III- **Environment Impact Assessment**

Global Collegiate Higher Secondary School, Pokhara, Nepal – Higher Secondary

Education Level 2014 – 2016

Science stream with major in Mathematics.

Academic Projects

Structural analysis and design of multi-storey office building – Final Year Project

November, 2020 - February, 2021

Structural Analysis of 6 (5 storey + Basement) storey office building using SAP2000. Detailed Design and Drafting of drawings in AutoCAD.

Comparison of Population Density Per Buildup Area of Most Populated Districts Using Satellite Imagery and Land Use Classification

October, 2021 - November, 2021

Landuse Mapping in Google Earth Engine (GEE) and QGIS using USGS LANDSAT 8 Imagery

Work Experiences

Mustang District Hospital , Jomsom , Mustang , Nepal – Engineer || March 2021 – July 2021

Immortal Construction Company Pvt. Ltd.

1. Prepare ongoing invoices that must be settled.
2. Verify that the terms of the contracts are being implemented.
3. Examine and maintain the project budget and schedule.
4. Make it easier for skilled personnel to follow the instructions so they follow the designs and contract agreement precisely.

Pre-stressed Concrete Mustang Bridge, Marpha , Mustang, Nepal – Engineer || July 2021 – March 2023

Immortal Construction Company Pvt. Ltd.

1. Verified the quantity of reinforcements and conducted cable profile checks.
2. Generated ongoing invoices for timely settlement.
3. Designed concrete mix proportions for M35 grade concrete in accordance with SP 16 of IS code.
4. Monitored and managed project budget and schedule.

Civil Engineer – BEC Builders Pvt. Ltd.

April 2023 – Present

1. Managed preparation and finalization of running bills to ensure accurate and timely contractor payments, prepared and verified structural and architectural drawings for ongoing construction projects
2. Developed a custom material estimation web application tailored for Nepali construction projects:
<https://test.becbuilders.com.np/>. Also its official website : <https://becbuilders.com.np/>.

3. Designed and launched the official company website to improve client engagement and service transparency: <https://becbuilders.com.np/>.

Skills

- Computing Skills (MS Word, MS PowerPoint, MS Excel)
- Moderate Coding skills (VBA, Matlab)
- Mobile App development (Dart Flutter)
- Design and drafting software AutoCAD
- Analysis software: SAP2000, ETABS
- Good presentation skills

Trainings and Certifications:

- Online training on **Structural Analysis Program (SAP)** – May, 2020
Conducted jointly by Khwopa College of Engineering and Khwopa Engineering College
- Online training on **Geographic Information System (GIS) Modeling and Remote Sensing** using Google Earth Engine – April, 2020
Conducted jointly by Khwopa College of Engineering and Khwopa Engineering College

Experiences and Personal Achievements:

Mobile Application Development (Android) : [Installation-file](#) || [Interfaces-of-Project](#)

1. Created algorithms in a coding module for a mobile application to optimize material utilization by precise estimation of brickwork and concrete volumes, including different grades (M15, M20, and M25).
2. Developed a mobile app solution that allows accurate plastering material calculation for thicknesses of 12.5 mm and 20 mm, enabling effective resource allocation in building projects.

Cut-Fill Calculator & Road Excel Planner Development

- Developed a **Cut-Fill Calculator** that calculates **cut and fill volumes** based on user-inputted reduced levels of **natural ground level (NGL)** and **road levels** <https://cutfill.aganjasarthak.com.np/>
- Created an **advanced version – Road Excel Planner**, which enhances automation by allowing users to **upload Excel files** instead of manually inputting values with secure login system with cloudflare serverless API at backend.
- Automates calculations and **generates a final report in PDF format**, including **calculations and graphs**. <https://roadexcelplanner.aganjasarthak.com.np/>
- **Login Credentials** : Username: saganja_admin123 , Password : pokhara123
- **Its new updated version** : <https://hroadexcelv1.aganjasarthak.com.np/>.
- **New updates** : AI voice powered FAQs , Can add multiple points across cross section (2-10), calculated dataset can be exported to excel file for advanced calculations.

Beam Web Application Development (JavaScript): Web-app link : <https://aganjasarthak.github.io/Web/>

1. Built a web application using JavaScript for finite element analysis (FEA) of a 2 degrees of freedom (DOF) beam, utilizing the stiffness matrix method with foundational principles from Euler-Bernoulli beam theory specifically for

vertical displacement calculations. This approach accurately determines vertical deflections under various loading conditions, tailored for scenarios with vertical-only responses.

2. Designed an interactive interface where users can input material properties, load values, and boundary conditions. The app computes vertical displacements by assembling and solving the global stiffness matrix.

Machine Learning Powered Web Application Development :

Web-app link : <https://concreteAI.aganjasarthak.com.np/>

___: <https://ULTRAconcrete.aganjasarthak.com.np/>

Train dataset (UC Irvine Repository) <https://archive.ics.uci.edu/dataset/165/concrete+compressive+strength>

1. Built a static ML powered web app to predict compressive strength of concrete as a part of research work

Development Of Datas / Management Tool using -VB Applications: [Github Repository Link](#)

(In Collaboration with Prayag Upadhyay, Graduate Scholar of Technical University of Munich , Germany)

1. Designed tables to automatically adjust based on input values (number of questions, part exams, number of students).

2. **Customized Grade Display:** Configured the tool to display results with grades according to professors' preferences.

3. **Streamlined Result Calculation:** Simplified the process of result calculation and results visualization for ease of use.

Reference: Prayag.upadhyay@tum.de ; prayag.bjr@gmail.com

Mail Bot (For Gmail and Outlook) Development using VB-Applications) : [Github Repository Link](#)

I developed a VBA Mail Bot in Excel that automates personalized emails by extracting data from a spreadsheet, streamlining communication and ensuring accuracy.

1. Engineered an Excel-based VBA Mail Bot using SMTP server that operates similarly to the *Mail Merge* extension in Google Sheets for Gmail.

2. Enhances efficiency by autonomously extracting recipient names, subjects, and closing remarks from an Excel spreadsheet.

3. Tailors and generates personalized emails for each recipient.

Advanced VBA-Enabled Bending Moment and Shear Force Analysis Model

1. Developed an Excel model utilizing Visual Basic for Applications (VBA) to rigorously analyze bending moment influence values in compliance with Indian Road Congressional code standards.

2. Tailored the VBA-driven tool to accommodate various model classes, including Class AA and bogie models, with customizable distance intervals.

3. Implemented systematic calculations (moving loads at 0.1m) at specified increments, facilitating precise determination of maximum bending moment and shear force values for accurate structural assessment..

Mushroom Classification Precision: Leveraging Logistic Regression in Coding Module (1,0)

1. Created a logistic regression model for classifying mushrooms using a large dataset (more than 8000 items) in the coding module.

2. Found important predictor factors that substantially influence the exact binarized output, such as gill color and cap form among 21 characteristics.

3. Highlighted the significance of technology , probabilistic approach in making accurate decisions by demonstrating how data-driven analysis, as represented by the model, improves classification accuracy and

highlights the influence of machine learning. $\frac{e^x}{1+e^x}$

Standalone Desktop App Development : For Accurate Construction Cost Estimation [Github Repository Link](#)

1. Created a cutting-edge desktop application that covers a variety of aspects, including concrete, wall sizes, and material prices, for accurate building cost estimation.

2. Emphasized data-driven precision, adding engineering principles with technology to provide precise cost estimates for bricklaying, plastering, punning, and grades M10, M15, and M20 (nominal mix) .

Simulations / Animations :

Concrete Strength Prediction : Machine learning optimization (Adam Optimizer with 10 Hidden Layers) with epochs variable:

Animation Video : <https://aganjasarthak.github.io/vid/>

Simulating Beam Deflection: A 5-meter beam under a moving 10 kN load using Finite Element Method . Discretization set at 0.1-meter intervals to capture accurate deflection values across the beam's length.

GitHub Repository: <https://lnkd.in/gJPgQyKV>

Animation video : https://www.linkedin.com/posts/sarthak-aganja-899026166_finiteelementmethod-fem-finiteelementmethod-activity-7241343612528066560-Y2EE?utm_source=share&utm_medium=member_desktop

Courses Certifications:

- 1.Course Name : Construction Management Specialization. *Awarded by: Columbia University*
Certificate URL : : [Click here](#)
- 2. Course Name Project Management Specialization *Awarded by: Google* , Certificate URL : : [Click here](#)
- 3. Course name : Mechanics of Materials *Awarded by : Georgia Institute Of Technology*
Certificate URL : <https://coursera.org/verify/ARBR6XGAYLTZ>
<https://coursera.org/verify/XSFU7M8ZU9S5> <https://coursera.org/verify/FP77ACSUEE4Y>
- 4. Course name : Autodesk Certified Professional: Revit for Architecture *Awarded by : Autodesk*
Certificate URL: [Click here](#)
- 5.Course name : Materials science *Awarded by : University Of California* Certificate URL : : [Click here](#)
- 6.Course name: Mastering Bitumen for better roads and innovative applications
Awarded by: École des Ponts ParisTech Certificate URL : : [Click here](#)

Registrations:

- Registered Engineer in **Nepal Engineering Council**, Registration number: **31162 Civil “A” Category**

Languages

- Nepali (Native tongue)
- English (Fluent reading, writing, and speaking)
- Hindi (Can communicate)

References

- **Er. Ratna Shova Prajapati**, Vice Principal, Senior Lecturer, Khwopa College of Engineering. E-mail: prajapati.shova@khwopa.edu.np
- **Er. Ramesh Bala**, Head of Department, Civil Engineering Department, Khwopa College of Engineering. E-mail: rameshbala.2043@gmail.com
- **Er. Nischal Khanal** Contact : 9865630262, Engineer, Immortal Construction Company Pvt. Ltd.

Declaration

I hereby declare that all the information mentioned above is true to my knowledge & I bear responsibility for them.

