
CURRICULUM VITAE

Nirmal Raj Joshi

PROFESSION: Civil Engineer
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DATE OF BIRTH: December 21, 1985
NATIONALITY: Nepalese

EDUCATION:

- PhD study in Civil and Environmental Engineering (2018-2021), Research topic: Numerical simulation of deteriorated concrete structures by Delayed Ettringite Formation and Alkali Silica Reaction. Saitama University, Japan
 - Masters in Civil and Environmental Engineering (2013-2015), specialization: structural material, Saitama University, Japan
 - Bachelor in Civil Engineering, (2003-2007), Pulchowk Campus, Institute of Engineering (IOE), Tribhuvan University, Nepal
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KEY QUALIFICATIONS:

- Structural analysis, design and detailing
 - Hydropower system design of civil components
 - Analysis and design of water supply system
 - 2D and 3D Drafting
 - Concrete technology
 - Engineering management and scheduling
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MEMBERSHIP OF PROFESSIONAL SOCIETIES:

- Registered Engineer - Nepal Engineering Council (Reg. No. 5342 "Civil")
 - Registered Member - Nepal Engineering Association (Reg. No. 10022)
 - Registered Member- Japan Society of Civil Engineers (Reg. No. 201400085)
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PROFESSIONAL EXPERIENCE :

Nov 2021- present **Civil Engineer at GPSS engineering, Japan**
Responsible for technical support to develop new small hydropower projects in Japan. Some projects include:

- Sugawa small hydropower project, Gunma (Under operation)
- Wakkatasapu small hydropower project, Hokkaido
- Pепенai small hydropower project, Hokkaido
- Zao gawa small hydropower project, Yamagata
- Otochiya small hydropower project, Gifu

Identification and field survey of more than 170 sites for potential study in Japan

Oct 2018- Sept 2021 **PhD Student at Saitama University, Japan.**
Research topic: Numerical analysis of deteriorated concrete structures.

Dec 2018-Sept 2020 Part time consultant for design of small hydropower in Japan for GPSS Holdings (<https://gpss.jp/>). I was involved in followings:

Sugwa Small Hydropower Project (199 kW, Gunma Prefecture) –site inspection, detail engineering design of civil components and communication with turbine manufacturers (Marvel, Europe).

Oritogawa Small Hydropower Project (199 kW, Hokkaido)- cost optimization and feasibility study. This project is under consideration for construction.

July 2016 to Sept 2018

Manager of Engineering at Sanima Hydro and Engineering Pvt. Ltd.
Responsible for managing technical human resource, assign task and keep track of all ongoing projects. Also involved as design leader for various engineering projects. Fully responsible for setting up and running the first branch office from April 2018. (<http://sanimaengineering.com/>)

Team leader for prefeasibility study to upgrade Khimti-1 Hydropower Project (60 MW) (Client: Himal Power Limited, Nepal) [January 2018]
Responsible for site verification, design, cost estimate and preparation of pre- feasibility study report to upgrade 60 MW project to 70 MW by adding a peaking pond. The project has been suspended.

Team member for development of Hydropower Study Guidelines (Client: DoED, Government of Nepal) [2017]
Responsible for literature review and drafting of revised National Hydropower Design Guidelines along with team of experts.

Team member for feasibility study of Kankai Multipurpose Project for Government of Nepal (Client: DoED, Government of Nepal) [2017 -ongoing]
Responsible for site verification, design, cost estimate to prepare feasibility study report of multipurpose project (irrigation, hydro, water navigation). The project consists of 80 m high dam and reservoir of 55 sq. km.

Project Engineer for Feasibility study of Jum Khola Hydropower Project (60 MW) (Client: Sanima Hydropower Ltd., Nepal) [November 2017]

Responsible for review, site verification, investigation and feasibility study report preparation. The project is under final stage for carrying out Power purchase agreement with Nepal Electricity Authority. (<https://sanimajum.com/>)

Energy Auditor for Lower Marshyangdi Hydropower Project (90 MW) (Client: DoED, GIZ Nepal) [2016]
Responsible for leading a team of engineers to measure energy efficiency of the project. This included measurement of hydraulic efficiency of project and electrical measurement. The report was presented to NEEP-II program hosted by GIZ Nepal.

Design team leader for Likhu Khola A hydroelectric Project (24.2 MW) (Client: Swetganga Hydropower Ltd., Nepal) [2016-2017]
Responsible for site verification, review of feasibility study, detail design and tender document preparation. The project was handed to new project engineer in 2017. The project is under operation from 2021. (<https://swetgangahydropower.com/>)

Setting up of new branch office for Sanima Hydro and Engineering Pvt. Ltd. [2018]
Responsible to set up and operate a new branch office with ~20 staffs. I was assigned as a branch head. The branch office was created to expand the head office. This was the first time any engineering consulting company had set up a branch in Nepal.

July 2015-July 2016

Assistant Manager at Sanima Hydro and Engineering Pvt. Ltd.

Responsible for managing technical human resource, assign task and keep track of all ongoing projects. Also involved as design leader for various engineering projects.

Senior designer for office building of Sanima Hydro and Engineering Pvt. Ltd. [2015-2016]

Responsible for detailed structural and architectural design and procurement coordination, material selection and construction of office building. The building is double story with floor area of 7200 square feet. The building uses structural steel and prefabricated boards.

Rehabilitation of Sunkoshi Small Hydropower Project (2.5 MW) (Client: Sanima Hydropower Ltd., Nepal) [2015-2016]

Responsible for rehabilitation of the powerhouse and penstock that was damaged due to the 7.8 M scale earthquake. The powerhouse has been retrofitted and penstock has been replaced. The project is under operation now.

May 2015-June 2015

Senior Civil Engineer at Sanima Hydro and Engineering Pvt. Ltd.

Responsible for checking design and preparation of various technical documents.

Preparation of operation and maintenance manual for Mai Hydropower Project and Mai cascade hydropower project [2015]

Responsible for preparing operation and maintenance manual for operation of civil components followed by training to the staffs of powerplant. (<https://maihydro.com/>)

April 2013-March 2015

Graduate Student at Saitama University, Japan

March 2008 – April 2013

Sanima Hydro and Engineering Pvt. Ltd.

Design Team member of Mai Hydropower Project (22 MW) , Illam (Client: Sanima Mai Hydropower (P.) Limited).

Responsible for structural design, detail drafting, bill verification and inspection of construction site of the project. The project has started generating electricity since 2014. The major responsibility assigned was to design hydraulic structures of headworks such as flood wall, intake, settling basin, gravel trap, undersluice, hydraulic gates etc and powerhouse. (web: www.maihydro.com).

Design leader of North Mathiyoa (5MW), Kenya (Client: Graeme Watson Associates, Nairobi, Kenya [2012]

Responsible for field visit and project layout at the site to prepare feasibility report. The feasibility study of the project has been completed. The project is under detail design.

Design leader of Don-Xom Microhydro Project (40kW), Laos (Client: Grenzzone Co. (Thailand)) [2013]

Responsible for field visit and project layout at the site. After site visit, hydraulic calculations were done followed by structural design, detail drafting, estimation and preparation of specification of the project. Also assisted client to manufacture and transport cross flow turbine from Nepal to Laos. The project is under operation since 2013.

Design Team member of Kipsonoi Hydropower Project (3 MW-5MW) , Kenya (Client: Graeme Watson Associates)

Responsible for field visit, project layout and inception report preparation. The project is under optimization study. Once the optimization is

completed, drafting, estimate and contract document will be prepared for the project.

Design Team member of Middle Trishuli Hydropower Project (55 MW) , Nuwakot (Client: Perfect Energy Development (P.) Limited)

Responsible for structural and hydraulic design of headworks and waterways, drafting and inspection of the project site for feasibility study. This project is under consideration for detail design.

Design Team member of Khanabad Hydropower Station – Afghanistan (Client: Integration Environment and Energy)

Responsible for structural analysis, reinforcement design and drafting of powerhouse.

Design Team member of Topchi Small Hydropower Project (1 MW), Afghanistan

Responsible for structural design of headworks and waterway structures. This project was revised to produce 500 KW and is under redesign phase. (<https://www.hydroreview.com/world-regions/asiaoceania/afghanistan-seeks-bids-to-build-500-kw-baharak-500-kw-topchi-small-hydro-projects/>)

Other similar projects worked on

- Design Team member of Junbesi Khola Hydropower Project – 5.2 MW (Client: Dovan Hydropower (P.) Limited).
- Thotane Khola Small Hydropower Project – 740 KW (Client: Dovan Hydropower (P.) Limited)
- Ghami Mini Hydropower Project – 320 KW (Client: National Trust for Nature Conservation /ACAP), Consultant: North Engineering Co. P. Ltd in association with Sanima Hydro and Engineering P. Ltd.
- Bhairabkunda Khola Hydropower Project – 3.0 MW (Client: Nikhil Jalashakti (P.) Limited)

Structural designer of headworks, waterways and powerhouse of following projects on part time basis

- Upper Maiwa Hydropower Project (17.85 MW) [2018]
- Nyadi Hydropower Project (7.1 MW) [2017]
- Miya Khola Hydropower Project (996 KW)[2015]
- Theule Khola Hydropower Project (1 .50 MW) [2014]
- Chake Khola Hydroelectric Project (2 .83 MW) [2013]
- Upper ChakuA' Hydroelectric Project (22.20 MW) [2012]
- Upper Mailung 'A' Hydropower Project (64.2 MW) [2013-2016]

Additional experience include

- Design of Conference hall for Summit Lodge at Kurintar Nepal [2016]
- Valuation of River Summit Lodge at Kurintar Nepal for Aabiral Engineering and Construction Pvt. Ltd.[2015]
- Insurance settlement for Everest Summit Lodge which was destroyed due to Gorkha Eathquake, Solukhumbu [2015]

Bill verification and inspection of construction / construction supervision

- Lower Modi-1 Hydropower Project (10MW) (client: Citizens Bank Pvt. Ltd.)
- Siprin Khola Hydropower Project (9.6 MW)(Client: Sanima Bikas Bank Pvt. Ltd.)
- Bhairabkunda Khola Hydropower Project (3MW) (Client: Sanima Bikas Bank Pvt. Ltd.)

Other related experience:

Field installation of hydrological and metrological stations for Upper Tamor Hydropower Project (415 MW) – Taplejung (2010)

Responsible for site selection and installation of manual and automatic gage station and metrological station (automatic rain gauge and temperature recorder) along the catchment of Tamor River (Western Nepal with a Swiss consultant in 20 days field trip).

Trainer for STAAD.Pro

Responsible for preparation of course material and teaching for staffs of Sanima Hydro and Engineering Pvt. Ltd. to use structural analysis software Staad.Pro 2006. Similarly, training provided to students at private institute to use the software. Staad.Pro is essential for structural analysis.

Training provided to the staffs of Lower Likhu Hydropower Project and Mai Hydropower Project for sediment sampling (PSD and Swidish Hand Held Sampler).

ACADEMIC FIGURES AND EXPERTISES:

- Member of panel of expert for preparing guidelines for design of hydropower stations for Nepal Government, 2016-17.
- Assistance to the co-writer for the book entitled “Hydroelectric Energy –Renewable energy and the Environment” (CRC press, Taylor and Francis group, 2017)

Major publications:

- N.R. Joshi, A. Matsumoto, S. Asamoto, T. Miura, and Y. Kawabata. Investigation of the mechanical behaviour of concrete with severe delayed ettringite formation expansion focusing on internal damage propagation under various compressive loading patterns. Cement and Concrete Composites, 128, 104433, 2022
- N.R. Joshi, S. Pakawat, T. Sriprasong and S. Asamoto, Time-Dependent Deformation of a Concrete Arch Dam in Thailand - Numerical Study on Effect of Alkali Silica Reaction on Deflection of Arch. Journal of Advanced Concrete Technology, 2021.
- N.R. Joshi, Matsumoto Ayumu, T. Sriprasong and S. Asamoto, Study on swelling effect due to ASR and DEF on reinforced concrete , ConMat20, 2020.
- T. Sriprasong, S. Asamoto and N.R. Joshi, Study on the combined alkali silica reaction and delayed ettringite formation, International Journal of GEOMATE, 2020.
- T. Sriprasong, T. Okobo, N.R. Joshi and S. Asamoto Study of Expansion and Subsequent Damage Due to ASR and DEF, IABMS Conference, 2019.
- S. Asamoto, N.R. Joshi, Investigation of volumetric change of cementitious materials at different temperature and relative humidity based on pore-liquid interaction, Japan Society of Civil Engineers (JSCE) Symposium, 2014.

ORGANISATIONAL SKILLS:

- Work planning and human resource scheduling
- Responsible to coordinate communication between field team and design team for national and international clients.
- Responsible for organizing recruitment and supervision of civil engineers.

SOCIAL SKILLS:

- Committee member for development of National Guidelines for design of Powerhouse by Government of Nepal (2016-2018)
- Regular blogger on technical knowledge and travelling. (<http://blog.nirmaljoshi.com.np>)
- Administrator of social online groups in facebook (“Civil Engineering Picture Gallery ~12000 members”;etc)
- Among the top 400 contributors to the English Wikipedia.

PARTICIPATION:

- IABMS Conference (2019, Hokkaido, Japan)
- A short course on design of hydropower water conduit (2017 March, the Netherlands)
- Workshop in design of fish passage, organized by IFC USAID (2016, Nepal)

- National Conference by Nepal Tunnelling Association on Risk Management and Contractual practise (2016, Nepal)
- Paper presentation in JSCE International Symposium for researchers (2014, Japan).
- International Workshop for Young Civil Engineers, organized by Japan Society of Civil Engineers (JSCE, 2014 Japan).
- Joint seminar between Tohakhu University and Saitama University (2014, Japan)
- One day course on Scour of Dam Downstream of Dams conducted Dr. George Annandale (Goldberg Associates Inc, USA). The event was organized by Hydro Lab, Nepal and Nepal Hydropower Association.
- Civil Engineering Student's Society (CESS) exhibition 2006, Automatic Sluice Gate, first prize.
- CESS Exhibition 2005, Modelling of Urban Drinking Water Treatment Plant.

OTHER ACADEMIC QUALIFICATIONS:

- Shrinkage behaviour of Cementitious materials (Dr. Asamoto Shingo, Saitama University, Japan)
- Highway bridge design (Prof. Yoshiaki OKUI; Saitama University, Japan)
- Trail Suspension Bridge Design. (Mr. Narendra Lal Joshi, Institute of Engineering, Nepal)
- Finite Element Analysis 1D and 2D. (Dr. Jagat K. Shrestha, Institute of Engineering, Nepal)

AWARDS:

- Monbukagakusho Scholarship by Japanese Government (MEXT) to study PhD (2018)
- Fellowship from the Orange Knowledge Programme, formerly known as NFP, by the Netherlands Government (2017)
- Excellent Master's Thesis Award (Saitama University-2015)
- Asian Development Bank Scholarship Award to study of Masters degree in Japan (2013)
- Nepal Government Scholarship Award to study Bachelor of Engineering(2003)

COMPUTER SKILLS:

- Windows/Linux
- Structural analysis and design software: Code-Aster, Salome Meca, STADD, Diana, SAP
- Drafting software: AutoCAD, Land Development, Civil Design, Google Sketchup.
- Arc GIS Basic, QGIS
- Hydraulic software: HEC-RAS, EPANET.
- Microsoft Office package: MS Project , Excel, Word, etc.
- Programming: Matlab, FORTRAN, JAVA, PHP, MYSQL Database, etc.

LANGUAGES:

	<u>Speaking</u>	<u>Reading</u>	<u>Writing</u>
English	Good	Good	Good
नेपाली (Nepali)	Native	Native	Native
हिन्दी (Hindi)	Intermediate	Intermediate	Intermediate
日本語(Japanese)	Lower Intermediate	Upper Intermediate (JLPT-N2)	Lower Intermediate

HOBBIES:

- Computing
- Hiking and Travelling

INTERNATIONAL EXPOSURE:

Nepal, Laos, Kenya, Thailand, Japan, Taiwan, India, Netherlands, France, Philippines, South Korea

Reference

- **Mr. Ajoy Karki** (Director, ajoy.karki@gmail.com; Sanima hydro and Engineering Pvt. Ltd. , Nepal)
- **Dr Asamoto Shingo** (Asso. Professor, asamoto@mail.saitma-u.ac.jp, Saitama University, Japan)
- **Mr. Nobou Kabeyama** (Former CEO, Phone: +81-090-1505-9110, sp-n.kabeyama@apricot.ocn.ne.jp Japan Hydropower Development Inc, GPSS Engineering, Japan. Currently Enelution Inc.)

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