Journal on Geoinformatics

Nepal

Number : 24

Jestha 2082 BS

May 2025 AD

Annual publication of Survey Department, Government of Nepal

The content and the ideas of the articles are solely of authors.

Published by:
Government of Nepal
Ministry of Land Management, Cooperatives & Poverty Alleviation
Survey Department
Min Bhawan, Kathmandu
Nepal

No. of copies : 500

© *Copyright reserved by Survey Department*

FOREWORDS

Survey Department with great honor present the 24th issue of the *Journal on Geoinformatics Nepal*, the esteemed annual publication of the Department. Over the years, this journal has served as an invaluable platform for knowledge sharing, research dissemination, and technological advancements in geoinformatics, contributing to the development and modernization of spatial sciences in Nepal.

Geoinformatics has evolved rapidly, transforming the way we collect, analyze, and utilize geospatial data for national planning, environmental sustainability, disaster management, and infrastructure development. As Nepal continues to embrace digital transformation, the integration of geospatial technology has become more essential than ever in supporting evidence-based decision-making and fostering innovation across various sectors. In this regard, the Survey Department, as the National Mapping Agency, has been continuously working to define a spatial reference frame, conduct large-scale topographic mapping, and perform cadastral mapping using UAV technology and orthophotos.

This issue showcases a diverse range of articles from experts, researchers, and practitioners in the field, reflecting the latest advancements in land surveying, GIS applications, remote sensing technologies, and spatial data management. These contributions reinforce our collective commitment to harnessing geoinformatics for sustainable development and technological progress.

I extend my sincere appreciation to all the authors, reviewers, and editorial team members whose dedication has made this publication possible. Your efforts ensure that *Journal on Geoinformatics Nepal*

remains a vital resource for professionals and academics engaged in geospatial sciences.

As we move forward, let us continue to collaborate, innovate, and advance the field of geoinformatics in Nepal. I encourage readers to engage with the insights presented in this issue and contribute further to this ever-evolving discipline.

Thank you for your continued support, and I look forward to witnessing the positive impact of geospatial technologies in shaping Nepal's future.

Enjoy Reading!
Thank you!

Prakash Joshi
Director General
lightjoshiji@gmail.com

EDITORIAL

Dear Readers,

It is with great pleasure that we present to you the 24th issue of the Journal on Geoinformatics Nepal, the annual publication of the Survey Department. Over the years, this journal has served as a platform to showcase groundbreaking research, technological advancements, and insightful discussions in the field of geoinformatics, contributing to the ongoing evolution of spatial science in Nepal and beyond.

This edition brings together a diverse collection of articles from esteemed professionals, researchers, and academics, highlighting the latest innovations, challenges, and applications of geospatial technology. From land surveying methodologies to remote sensing advancements, spatial data infrastructure, and GIS applications in various sectors, the contributions in this issue reflect the dynamic progress of geoinformatics and its role in shaping informed decision-making.

As technology continues to reshape the way we understand and interact with our environment, the Survey Department remains committed to fostering knowledge, collaboration, and the dissemination of valuable research within the geospatial community. We extend our heartfelt gratitude to all the contributors, reviewers, and editorial team members whose dedication has made this publication possible.

We invite you to explore the articles within this issue, engage with the insights presented, and join us in advancing the future of geoinformatics in Nepal. Your continued support and contributions inspire us to push the boundaries of knowledge and innovation.

Thank you for being a part of this journey, and we look forward to your valuable feedback and engagement in future editions.

Warm regards,

Karuna K.C.
Editor-in Chief,
Jestha, 2082 (May 2025)

Advisory Council

Prakash Joshi
Chairperson

Karuna K.C.
Member

Susheel Dangol
Member

Krishna Prasad Sapkota
Member

Narayan Regmi
Member

Editorial Board

Karuna K.C.
Editor-in-Chief

Bikash Kumar Karna (Ph.D.)
Member

Tanka Prasad Dahal
Member

Damodar Dhakal
Member

Journal on
GEOINFORMATICS
Nepal

Jestha 2082, May 2025
Number 24

Product Price

Maps
Page 67

Control Points
Page 67

CORS Station Data
Page 67

Geoid Data
Page 67

Price of Aerial Photograph
Page 32

Land Use Digital Data
Page 32

Price of Printed Maps
Page 32

Digital Orthophoto Image Data
Page 32

Digital Topogrphical Data
Page 32

LiDAR Data
Page 32

List of Paper Reviewer

Susheel Dangol
Ajit Kunwar
Bikash Kumar Karna (Ph. D.)
Harisharan Nepal
Khim Lal Gautam
Sanjeevan Shrestha
Sudip Shrestha

Cover Concept

Technological developement of cadastral survey

Features

Articles

Contents

1 **Accuracy Assessment of Open-Source DEM: A Case for Nepal**
Tanka Prasad Dahal & Susheel Dangol
Page 1

2 **Comparative Assessment of Archaeological Scene Reconstruction Using Iphone Lidar Scanner**
Binod Prasad Bhatta, Abishek Shah, Man Kumari Chaulagain, Aagya Dhungana, Lalit Mandal, Punam Koirala, Shangharsha Thapa & Uma Shankar Panday
Page 9

3 **Comparison of Deep Learning Models with Different Backbones for Building Footprints Extraction in Dense Residential Areas of Bhaktapur**
Abin Prajapati & Romik Gosai
Page 21

4 **Evaluating Machine Learning Algorithms for Forest Cover Extraction in Kailali, Nepal**
Sudarshan Kumar Gautam, Sanjeevan Shrestha, Subhadra Joshi & Jeshan Pokharel
Page 33

5 **Flood Hazard Modelling Assessment Using Deep Learning and Earth Observation**
Binita Shahi, Arjun Poudel, Ashmeera Dahal & Sandesh Upadhyaya
Page 41

Contents

Professional Organization Pages

Nepal Remote Sensing and Photogrammetric Society
Page 68

Nepal Surveyor's Association (NESA)
Page 76

Nepal Geomatics Engineering Society (NGES)
Page 104

Regular Column

Forewords
Page iii

Editorial
Page v

Obituary
Page 20

Call for Papers
Page 48

Calender of International Events
Page 58

Informations

Instruction and Guidelines for Authors Regarding Manuscript Preparation
Page 62

Contents

6 **Integrating GIS and AHP for Forest Fire Risk Mapping in Kailali, Nepal**
Ganesh Pandey & Daman Neupane
Page 49

7 **Developing New National Geodetic Reference Frame of Nepal**
Narayan Regmi, Sandesh Upadhyaya, Manisha Thapa, Shiva Prasad Lamsal & Suraj Bahadur KC
Page 59

8 **Multi-Modal Image Synthesis with Attention Conditional GANs: SAR, Optical, and DEM**
David Nhemaphuki, Ajay Kumar Thapa & Umesh Bhurtyal
Page 69

9 **Present Land Use and Land Use Zoning of Kushma Municipality: A Comparative Assessment with Cadastral Superimpose**
Sushmita Subedi, Roman Pandit, Manoj G.C. & Indra Subedi
Page 77

10 **Remeasuring Annapurna I: Geospatial Innovation and the Quest for Precision**
Er. Khim Lal Gautam & Suraj Bahadur K.C.
Page 93