Online Workshop on
Machine Learning for Landslide Prediction Mapping with RStudio and ArcGIS
November 10 to December 11, 2023

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Organized by
Advances in Geographical Research

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About Advances in Geographical Research

Advances in Geographical Research (AIGR) is an online research training institute that offers courses and hands-on training programs aimed at providing individuals with the skills and knowledge necessary to conduct research effectively and efficiently. AIGR provide a flexible and convenient alternative to traditional in-person training, allowing individuals to learn at their own pace and on their own schedule. AIGR provides certified professional training, development opportunities and assured innovative research ideas for the next generation of researchers, such as research design and methodology, data collection and analysis, and the use of various research tools and software. Our motto is making the complex simple. Led by some of the world's leading researchers, who provide key insights from their experience, our training programs support career development and encourage our researchers to excel in their field.

Resource Person

Primary Trainer **Mr. Sujit Kumar Roy** is currently working as a Research Assistant at a Multinational Company. He is currently pursuing a Post-Graduation degree in Water Resources Development from Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET), Bangladesh and has a Bachelor's degree in Environmental Science and Disaster Management from Noakhali Science and Technology University (NSTU), Noakhali, Bangladesh. He has over 5 years of working experience in the field of EIA, RS and GIS for different national (Government) and international projects as post of GIS analyst at Suchana Engineers Limited, Research Assistant at IWFM, BUET, Research Fellow at RAiN Forum, Junior Environmental Expert at Plan Plus Limited (PPL). As an independent researcher, Sujit collaborates with a talented cohort of software experts, jointly publishing several groundbreaking scientific articles in internationally renowned journals. His contributions transcend multiple disciplines, encompassing RS and GIS, Hydrology, Time Series Analysis, Natural Hazards, Coastal Zone Management, Machine Learning, and Deep Learning. Through his relentless pursuit of knowledge, Sujit is actively driving the advancement of environmental research.

Training Benefits

- Gain hands-on experience in using both RStudio and ArcGIS for landslide prediction mapping.
- Acquire the knowledge and skills necessary to predict and map landslide susceptibility accurately.
- Harness the power of machine learning to address real-world environmental challenges.
- Instructors continuous support, taking your hand step-by-step to develop high-quality prediction maps using real data
- Live WhatsApp Chatting with instructor
- 1:1 Sessions with experts
- Lifetime subscription
- Any time watch recorded video
- Easy Payment Gateway such as Debit card, credit card, UPI etc. (international payment also acceptable)

Certificate and Course materials

Participants who successfully complete the workshop will receive a course certificate after submitting all assignments. They will also receive materials such as slides and PDFs, access to practice code, recorded videos of all classes, and lifetime teaching support.

Language

Lecture and training materials are in English.

Registration fee

India: 10,000 INR (₹), **Bangladesh:** 12,000 BDT (৳)
Other countries: 150 USD ($)

Important dates

Class Start: 10th November 2023
Admission Last Date: 09th November 2023
Class: Friday and Saturday in Week
Class Durations: 1-30 hours (Each day)
Time: 7:00 PM to 8-30 PM (GMT +5.30)

Online Platform

Zoom (Lifitime recorded sessions access)

Course Overview

Join our Online Workshop: Machine Learning for Landslide Prediction Mapping with RStudio and ArcGIS.

Unlock the world of machine learning and geospatial analysis as we guide you through a comprehensive journey in this workshop. Covering a wide spectrum of topics, this workshop is designed to provide you with practical knowledge and skills that can be applied to real-world challenges in landslide prediction mapping.

In Module 1, Start with machine learning foundations, history, terminology, and core components. Explore techniques, practical applications, and distinctions from traditional programming. Understand common algorithms, the machine learning workflow, and future trends.

Module 2: Focus on data preparation and exploration, including data collection, preprocessing, exploratory data analysis for geospatial data, and spatial data handling.

Module 3: Enhance prediction accuracy through feature selection and engineering strategies.

Module 4: Build Random Forest and Support Vector Machine models in model selection and training.

Module 5: Learn model evaluation, prediction, assessing performance, and spatial visualization.

Module 6: Discover model refinement techniques, including hyperparameter tuning and feature engineering.

Module 7: Bring it all together by training the final model, generating susceptibility maps, and effective visualization/reporting.

This workshop is an opportunity to acquire a comprehensive skill set that bridges the gap between theory and practical application, empowering you to excel in the field of landslide prediction mapping using RStudio and ArcGIS. Join us for this engaging and informative journey into the world of machine learning and geospatial analysis.

Download the Android app from the play store: **AIGR**
https://play.google.com/store/apps/details? id=com.knorish.AIGR

Course Content

The workshop will be divided into seven modules:

Module 1: Foundations of Machine Learning

1.1 Introduction to Machine Learning
1.2 Historical Perspective
1.3 Essential Terminology
1.4 Core Components of Machine Learning
1.5 Machine Learning Techniques
1.6 Comparison with Traditional Programming
1.7 Practical Applications
1.8 Challenges and Limitations
1.9 Common Machine Learning Algorithms (Linear Regression, Random Forest, Support Vector Machines, k-Nearest Neighbors)
1.10 Distinguishing Machine Learning from Artificial Intelligence
1.11 The Machine Learning Workflow
1.12 Understanding Under-fitting and Over-fitting
1.13 Future Trends in Machine Learning

Module 2: Data Preparation and Exploration

2.1 Data Collection Strategies
2.2 Data Preprocessing Techniques
2.3 Exploratory Data Analysis (EDA)
2.4 Spatial Data Handling and Preparation

Module 3: Feature Selection and Engineering

3.1 Strategies for Feature Selection
3.2 Techniques for Feature Engineering

Module 4: Model Selection and Training

4.1 Building a Random Forest Model
4.2 Constructing a Support Vector Machine Model

Module 5: Model Evaluation

5.1 Making Predictions
5.2 Assessing Model Performance
5.3 Spatial Visualization of Results

Module 6: Model Refinement

6.1 Optional Hyperparameter Tuning
6.2 Iterative Feature Engineering

Module 7: Final Model and Mapping

7.1 Training the Final Model
7.2 Generating Landslide Susceptibility Maps
7.3 Visualizing and Reporting the Findings

How to apply

Interested candidates may pay online payment getaway system available on AIGR website. For Indian candidates select **Razorpay** and for other countries must select **Stripe** during payment, Bangladeshi candidates have the option to conveniently pay directly via **bKash** (+8801748985407, after payment mail screenshot: **aigeo.research@gmail.com or WhatsApp: +91 94751 72399**). For African countries candidates can also pay via **Western Union** (For details SMS +91 94751 72399).
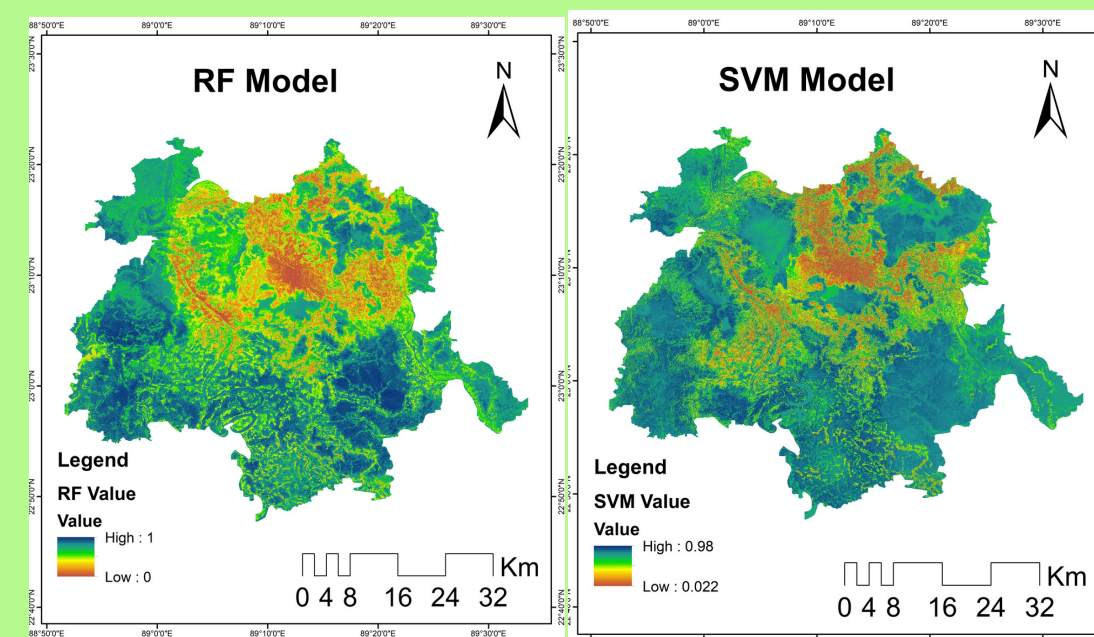
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