

CURRICULUM VITAE

1. Name:

Distinguished Prof. Dr. Biswajeet Pradhan



2. Work Address:

Distinguished Professor

Director, Centre for Advanced Modelling and Geospatial Information Systems (CAMGIS), School of Civil and Environmental Engineering, Faculty of Engineering and Information Technology, University of Technology Sydney, CB11.06.106, Building 11, 81 Broadway, Ultimo NSW 2007 (PO Box 123), Australia, Tel. No. +61 2 9514 7937; Mobile- +61-432333125

E-mail Address: Biswajeet.Pradhan@uts.edu.au / biswajeet24@gmail.com

3. Field(s) of Specialization:

Prof. Pradhan is an expert in Geospatial Information Systems (GIS), spatial analysis and modelling of Earth applications specifically hazard and risk assessment. His applications in risk assessments in various environmental settings has earned him an international reputation. He focuses on the use of predictive modelling including integrated and ensemble modelling.

4. Current Research Area / Topics:

Machine Learning & AI, Spatial Intelligence, Complex Modeling, Remote Sensing & GIS, Environmental & Natural Resources Modelling

5. Academic Qualifications:

- Ph.D., GIS & Geospatial Engineering, University Putra Malaysia, Malaysia, 2006
- M.Tech., Civil Engineering, IIT Kanpur, India, 2000
- M.Sc., IIT Bombay, India, 1998
- B.Sc., (Hons.) with Distinction: Berhampur University, India, 1995

6. Brief Career History:-

- Sept 2017- Present, Distinguished Professor, Faculty of Engineering & IT, University of Technology Sydney, Australia
- 2016 - Dec 2017. Full Professor, Faculty of Engineering, University Putra Malaysia

(UPM)

- 2010-2016: Associate Professor, Faculty of Engineering, University Putra Malaysia (UPM)
- 2008-2010 Alexander von Humboldt Research Fellow, Dresden University of Technology, Germany
- 2007-2009 Postdoctoral (Concurrent position), Institute of Advanced Technology, University Putra Malaysia (UPM)
- 2005-2007 Senior Manager, Cilix Corporation, Technology Park Malaysia, Kuala Lumpur, Malaysia
- 2002-2004 Senior Lecturer, Asian Institute of Medicine, Science and Technology University, Malaysia
- 1999-2002 Research Scientist, Dresden University of Technology, Dresden, Germany
- 1996-1998- Research Assistant, Indian Institute of Technology (IIT), Bombay

7. Teaching Experience:-

Since 1999, Prof. Pradhan has taught a wide range of Civil Engineering, Geospatial, and Remote Sensing subjects at undergraduate and postgraduate levels across several international universities. His teaching consistently integrates research advances with practical applications, preparing students for real-world problem-solving.

- Undergraduate (UG) Subjects:
 - Surveying
 - Civil Engineering Drawing
 - Remote Sensing for Civil Engineers
 - Geomatics & Geology Camp
 - Image Processing and Computer Vision
 - Engineering Geology
- Postgraduate (PG) Subjects:-
 - Radar Image Processing
 - Remote Sensing & GIS Applications
 - GIS for Engineers
 - Disaster Forecasting
 - Hazard, Risks, and Ethics
 - Research Methodology
 - Planning, Field Investigation and Monitoring for Tunnels
- Teaching Impact:

Teaching evaluations consistently above 80% (>4.5/5) across all subjects.

Courses integrate “current research” in machine learning, spatial intelligence, and remote sensing applications.

Increasing emphasis on “smart agriculture and sustainability”, linking classroom teaching with applied case studies in “precision agriculture, crop monitoring, and AI-based decision-support systems”.

8. Teaching and Strengths in Smart Agriculture:-

Prof. Pradhan has developed a strong teaching profile that integrates “geospatial technologies, machine learning, remote sensing, and AI applications in smart agriculture”. His teaching highlights the role of spatial intelligence, predictive analytics, and digital modelling in transforming agricultural systems to improve crop yield, optimise resource allocation, and reduce environmental impacts.

At UTS, he has embedded “smart agriculture case studies” into courses on GIS, remote sensing, and spatial intelligence, demonstrating real-world applications of AI and digital farming platforms. He has also supervised numerous postgraduate students on topics such as “AI-driven crop monitoring, digital twins for agri-food systems, and precision agriculture technologies”. These contributions ensure that his teaching is aligned with both “industry demand” and “emerging global trends” in sustainable agriculture and food security.

9. Number of Postgraduate Students Supervised:

Prof. Pradhan has advised 60 PhD students and currently supervises 15 research students.

Program	Status	Number of candidates
PhD	Graduated	46
	Ongoing	13
Masters (with thesis)	Graduated	12
	Ongoing	-
Masters (without thesis)	Graduated	30
	Ongoing	-

10. Visiting Faculty Appointment:

- August 2020- Present, Distinguished Visiting Professor, Faculty of Engineering, National University of Malaysia
- July 2019- Present, Adjunct Professor, Department of Civil Engineering, Indian

Institute of Technology Indore (IIT-Indore)

- March 2016 – Present, Visiting Professor, Sejong University, South Korea
- August 2020 – August 2022 – Visiting Professor, King Abdulaziz University, Jeddah, Saudi Arabia
- January 2022 - January 2024. Visiting Professor, Universiti Malaysia Terengganu, Malaysia
- July 2022 - July 2024. Distinguished Visiting Professor, Mara University of Technology Malaysia, Malaysia
- March 2023-Present, Adjunct Professor, Department of Civil Engineering, Malaviya National Institute of Technology Jaipur (MNIT- Jaipur), India

11. Achievements / Awards:

His research work has earned him as one of the Highly Cited Researcher by Clarivate Analytics for the last 5 years. He has also been awarded World Class Professor by the Indonesian Ministry of Research, Technology and Higher Education (2018, 2019, 2020) and Research Star Award by the Malaysian Ministry of Education in 2017. He also served as “Ambassador Scientist” for Alexander Humboldt Foundation, Germany with a goal to promote information on its sponsorship programs to research institutions in Southeast Asian countries.

Prof. Pradhan has received 58 awards since 2006 in recognition of excellence in teaching, service and research. Examples include:

- Globally Ranked No. 1 in the field of "*Geological & Geomatics Engineering*" during the calendar year 2021-2025. The list is prepared by Stanford University Researchers, USA, which publishes its ranking of the world's top 2% of most highly cited researchers based on Scopus data.
- Ranked #1 globally in "Geomatics" and "Landslide" (ScholarGPS) with a lifetime ranking of # 52 in Computer Science and #289 in Engineering and Computer Science.
- Ranked #18 globally and # 3 in Australia in "Earth Science" (Research.com).
- Recognized as "Australian National Research Leader" in "Remote Sensing" by The Australian Research magazine in 2023-2025.
- Recognized as a Highly Cited Researcher by Clarivate Analytics in fields of Computer Science (2016-19) and in two fields in 2020 (Computer Science and Agriculture).
- Highly Cited Researcher from 2016-2021 by Clarivate Analytics.
- 2018 – 2020, World Class Professor by the Ministry of Research, Technology and

Higher Education, Indonesia

- 2016-2017, Malaysia research Star Award by Ministry of Higher Education, Malaysia
 - Humboldt Ambassador Scientist Award of the Alexander von Humboldt Foundation (Germany), 2015 - 2021.
 - International Committee on Space Research (COSPAR) Travel Grant Award.
 - International Committee on Space Research (COSPAR) Travel Grant Award
 - Special Award, University Putra Malaysia, 2016
 - International Committee on Space Research (COSPAR) Travel Grant Award by 41st COSPAR Scientific Assembly and Associated Events, Istanbul, 2016.
 - Excellent Teaching Award, University Putra Malaysia, 2016
 - Publication Award, University Putra Malaysia, 2016
 - Excellent Services Award, University Putra Malaysia, 2016
 - Industry and Community Network High Impact Award, University Putra Malaysia, 2016
 - Excellent Services Certificate, University Putra Malaysia, 2015.
 - Excellent Services Certificate, University Putra Malaysia, 2014.
 - Medal for the invention of "Above Ground Biomass Estimation of Oil Palm Trees by Universiti Putra Malaysia, 2013. (Gold medal)
 - Medal for the invention of "Above Ground Biomass Estimation of Oil Palm Trees using PALSAR", MIE expo-2013. (Gold medal)
 - Excellent Researcher Award, Faculty of Engineering, University Putra Malaysia, 2013
 - Excellent Services Certificate, University Putra Malaysia, 2013.
 - Excellent Teaching Award, University Putra Malaysia, 2013
 - Excellent Teaching Award, University Putra Malaysia, 2012
 - Medal for the invention of by RMC, Universiti Putra Malaysia, 2013
 - Research and Innovation Center, University Putra Malaysia. 2012.
 - Best Paper Award (Aerospace Applications) at the 4th Conference on Recent Advances in Aerospace Technology (AEROTECH IV 2012), 2012.
 - Medal by Research and Innovation Center for the invention "A novel data driven evidential belief function model for landslide prediction in Malaysia", University Putra Malaysia. 2012.
 - International Committee on Space Research (COSPAR) Travel Grant Award by 39th COSPAR Scientific Assembly and Associated Events, Mysore, India, 2012.
- Travel Grant Award

- National Space Agency (Malaysia) Publication Award 2011.
- Medal for the invention of "Integrated 3D Terrain Visualizer" by Universiti Putra Malaysia, 2011. (Gold medal)
- National Space Agency (Malaysia) Publication Award 2011.
- National Medal for the invention of "Integrated 3D Terrain Visualizer" by PECIPTA 2011, Ministry of Higher Education, Malaysia, Kuala Lumpur Convention Centre, 13-15 September 2011.
- International Committee on Space Research (COSPAR) Travel Grant Award by 38th COSPAR Scientific Assembly and Associated Events, Bremen, Germany, 2010.
- Top 100 Scientists Award®, The International Biographical Centre, Cambridge, UK, 2010-2012
- Alexander von Humboldt (AvH) Fellowship Award, Germany, 2008.
- Association of Geographic Information Laboratories Europe (AGILE) Travel Grant Award 2009
- Keith Runcorn Travel Award for Non-Europeans (KRTA): EGU2009 grant award
- Deutscher Akademischer Austausch Dienst (DAAD) Fellowship Award
- Gold Medal for the invention of “Integrated 3D terrain visualizer” by The Belgian and International Trade Fair for Technological Innovation. Brussels. 20 November 2010.
- Gold Medal for the invention of “A New Robust Data Compressor for GIS Spatial Data Compression” by Ministry of Science, Technology and Innovation Malaysia, 2006 (Gold)
- International Trade Fair Medal Award: 2006, Nuremberg, Germany.
- Gold Medal for the invention of “Integrated 3D terrain visualizer” by The Belgian and International Trade Fair for Technological Innovation. Brussels. 20 November 2010.
- Alexander von Humboldt (AvH) Fellowship Award, Germany, 2008.
- Featured in Who's Who in the World®, published in November 2008.
- Association of Geographic Information Laboratories Europe (AGILE) Travel Grant Award 2009
- Keith Runcorn Travel Award for Non-Europeans (KRTA): EGU2009 grant award
- International Committee on Space Research (COSPAR) Travel Grant Award to attend 36th COSPAR Scientific Assembly and Associated Events, Beijing, China, 2006. International Committee on Space Research (COSPAR) grant award to attend 35th COSPAR Scientific Assembly and Associated Events, Paris, France, 2004.

- Deutscher Akademischer Austausch Dienst (DAAD) Fellowship Award
- Editor's recognition for highly cited article in "Computers & Geosciences" for the paper "A comparative study on the predictive ability of the decision tree, support vector machine and neuro-fuzzy models in landslide susceptibility mapping using GIS". Volume 51, Issue, February 2013, Pages 350-365.
- Editor's recognition for highly cited article in "Computers & Geosciences" for the paper "Application of a neuro-fuzzy model to landslide-susceptibility mapping for shallow landslides in a tropical hilly area. Volume 37, Issue 9, September 2011, Pages 1264-1276.
- Editor's recognition for highly cited article in "Computers & Geosciences" for the paper "Application of an evidential belief function model in landslide susceptibility mapping, Volume 44, Issue , July 2012, Pages 120-135.
- Editor's recognition for highly cited article in "Computers & Geosciences" for the paper "Landslide susceptibility mapping at Hoa Binh province (Vietnam) using an adaptive neuro-fuzzy inference system and GIS, Volume 45, Issue , August 2012, Pages 199-211.
- Editor's recognition for highly cited article in the journal of "Advances in Space Research" for the paper "Remote sensing and GIS-based landslide hazard analysis and cross-validation using multivariate logistic regression model on three test areas in Malaysia", 2012.
- Editor's recognition for highly cited article in the journal of "Environmental Modelling & Software" for the paper "Landslide susceptibility assessment and factor effect analysis: backpropagation artificial neural networks and their comparison with frequency ratio and bivariate logistic regression modeling", 2014.
- Editor's recognition for highly cited article in the journal of Computers, Environment and Urban Systems for the paper "A GIS-based back-propagation neural network model and its cross application and validation for landslide susceptibility analyses", 2010-2015.
- Editor's recognition for highly cited article in "Computers & Geosciences" for the paper "An easy-to-use MATLAB program (MamLand) for the assessment of landslide susceptibility using a Mamdani fuzzy algorithm Volume 38, Issue 1, January 2012, Pages 23-34. A. Akgun | E. A. Sezer | H. A. Nefeslioglu | C. Gokceoglu | B. Pradhan.
- Best Paper Award (Aerospace Applications) at the 4th Conference on Recent Advances in Aerospace Technology (AEROTECH IV 2012), 2012.
- Gold Medal for the invention of "Integrated 3D terrain visualizer" by The Belgian

and International Trade Fair for Technological Innovation. Brussels. 20 November 2010.

- Gold Medal for the invention of "A New Robust Data Compressor for GIS Spatial Data Compression" by Ministry of Science, Technology and Innovation Malaysia, 2006 (Gold)
- International Trade Fair Medal Award: 2006, Nuremberg, Germany.
- Medal by Research and Innovation Center for the invention of "Operational Remote Sensing Tools for Mapping, Monitoring and Mitigation of Mass movements in Malaysia", University Putra Malaysia, 2007.
- Medal by Research and Innovation Center, University Putra Malaysia.2006.
- Gold Medal for the invention of "A New Robust Data Compressor for GIS Spatial Data Compression" by Ministry of Science, Technology and Innovation Malaysia, 2006 (Gold)
- Medal by Research and Innovation Center, University Putra Malaysia, 2007.
- Medal by Research and Innovation Center, University Putra Malaysia.2006.

12. Invited Keynote Presentations:-

Prof. Pradhan has been invited as a keynote speaker and forum panel member for geospatial and remote sensing scientific events internationally and nationally. Since 2013, Prof. Pradhan has delivered **70 keynote and invited talks** at international conferences.

13. Academic Program Development and Assessment:-

Prof. Pradhan has contributed significantly to academic program development and external assessment in his field. His roles include:

- External Examiner, Faculty of Engineering & Technology, Multimedia University, Malaysia (Jan 2025 – Dec 2026): Appointed to oversee academic standards and quality assurance in engineering programs.
- Program Developer, Amrita Center for Wireless Networks & Applications, Amrita Vishwa Vidyapeetham, India (2019–2023): Played a central role in the initiation and academic structuring of the new Master's Program in Geoinformatics and Earth Observation launched at the Amritapuri campus. Contributed to course design, curriculum development, and research integration.
- Academic Program Evaluator, College of Built Environment, Universiti Teknologi MARA (UiTM), Malaysia (2021–2023): Provided expert guidance on curriculum enhancements and academic benchmarking to strengthen the institution's

geospatial science offerings.

- Adjunct Faculty Contributions: Across multiple institutions—including IIT Indore, MNIT Jaipur, Sejong University, South Korea, and others—Prof. Pradhan has contributed to postgraduate curriculum design, research training modules, and program reviews to ensure alignment with international academic and industry standards.

14. Research Funding/Grants/Support Income:-

Prof. Pradhan has been awarded A\$20 million to undertake research as outlined below:

- Modernise geotechnical investigation and analysis with machine learning (2023-2025)
- Knowledge Graph for Health Querying Health Data. Source: Surround Australia (2021)
- Credit risk assessment using machine learning (2019-2020)
- Machine Learning modelling to analyse medical data including imaging, video and text-based reports. Industry funding from Cogninet Australia (2021-2022)
- Merging data science, satellite pollen surveillance, & geospatial models for tracking respiratory disease health impacts (2020)
- A robust classifier based on adversarial deep learning for unseen object classifications (2019)
- 3D visualization of highway geometry from mobile laser scanning (LiDAR) dataset (2018)
- Development of an optimized spatial model for orthorectification of high resolution satellite images for urban applications (2018)
- Temporal LiDAR data in quantifying cumulative rockfall volume and hazard assessment at southwestern Saudi Arabia (2020)
- Landslide susceptibility mapping at Asir Region, KSA (2019)
- The Catchment Study For Rainfall Induced Debris Flow At Selected Locations Along North-South Expressway Using High Resolution Satellite Images And Statistical Based Spatial Models (2017-2018)
- Development of LMToolbox (Landslide Modelling Toolbox) for Landslide Modelling and Risk Assessments Using ArcGIS and Python Environments (2017-2018)
- Vehicle Emission Modeling and Assessment Emitted From the Traffic at Selected Stretches of NKVE Expressways Using Integrated Geospatial Modelling Technologies (2017)

- Development of traffic noise emission modelling at selected stretches for estimating and evaluating noise emission level by using GIS (2017)
- Agriculture sprawl assessment using multi-temporal remote sensing images and its environmental impact at Al-Jouf, KSA (2017)
- Development of Coherence Flood Detection and Novel Ensemble Flood Modelling Approaches Using RADAR Satellite Images in Tropical Area (2017)
- Flood hazard assessment of the urban area of Tabuk city, Kingdom of Saudi Arabia by integrating spatial-based hydrologic and hydrodynamic modeling (2017)
- A comprehensive landslide detection, susceptibility, vulnerability and risk assessment along selected stretches of plus expressways using multi-sensor remote sensing data and advanced geospatial models (2015-2016)
- Development of an Automated Hybrid Data Fusion Technique for the Integration of Full-Waveform LiDAR Data with High Spatial Resolution Imaging in an Urban Environment (2016)
- Analysis on causes of flash flood in Jeddah city (Kingdom of Saudi Arabia) of 2009 and 2011 using multi-sensor remote sensing data and GIS (2015)
- Coherence modelling for rapid flood inundation (2015).
- Forensic analysis on the highway geometric and profiling using high resolution Lidar data (2015-2016)
- Flood hazard and risk analysis for new klang valley expressway (nkve) in sungai damansara water catchment using multi-sensor remote sensing, geographic information system and machine learning based models (2014-2016)
- Terrigenous mass movement analysis of selected areas along the north-south expressways using remote sensing, geographic information system, probabilistic and statistical based models (2013-2015)
- Spatial analysis of zoogeomorphological speleogenesis of birds and bats nest/root sites at Gomantong Cave (2014).
- Debris flow impact assessment along the Al-Raith Road, Kingdom of Saudi Arabia, using remote sensing data and field investigations (2014)
- Spatial analysis of zoogeomorphological speleogenesis of the birds and bats nest/root sites at Gomantong Cave in Malaysia (2014-2016)
- Modelling near-equatorial remote imaging (2014).
- Study On Spectral Bands Synthesis for Mineral Identification and Prediction in Malaysia Using Geospatial Modeling Techniques (2013-2015)
- Seismic Hazard Assessment of Soil Deposits from Peninsular Malaysia:

Fundamentals of Earthquake Resistant Design (2013-2015)

- Modelling near equatorial remote imaging: models and methods for image processing (2014-2016)
- Development of an ensemble based modeling algorithm for landslide prediction and forecasting in Malaysia (2012-2013)
- Remediation and mitigation strategies for rock fall hazards along the highways of Fayfa Mountain, Jazan Region, Kingdom of Saudi Arabia (2012)
- Development of a data driven evidential belief function model to predict potential groundwater zonation in Malaysia (2012-2013)
- Coupling of remote sensing data aided with field investigations for geological hazards assessment in Jazan area, Kingdom of Saudi Arabia (2010)
- Develop operational remote sensing tools for mapping, monitoring and mitigating mass movements (2007).

He has successfully bids for projects funded (>\$7M in total):

- National Disaster Data and Information Management System (NADDI) project (2004-2007). NADDI focuses on the management of 5 main natural disasters—forest fires, floods, landslides, oil spills, and “hot-installation”. The program addresses the requirement for managing these disasters before, during, and after a disaster.
- Malaysian Airborne Remote Sensing System (MARS) project (2004).

He has undertaken over A\$2m contract research with many leading industries in Malaysia and Brunei.

In these projects, he has pioneered new spatial modelling techniques for environmental problems including landslide detection, debris flow, landslides and flood hazards assessment, traffic accident assessment based on highway geometry, vehicle emission modelling, and traffic noise emission modelling.

15. Editorial Experience:-

Editor and Editorial Board Member for 10 international journals e.g. Geoscience Frontiers (Q1- top 5% for multidisciplinary geosciences), Landslides (the #4 ranked journal for geological engineering), Sensors (Q1 for instruments & instrumentation), Remote Sensing (Q1 for remote sensing), Complex & Intelligent Systems (Q2), Geomatics, Natural Hazards & Risk (Q1), Journal of Sensors (Q2) and many more.

16. Professional Activities:-

Prof. Pradhan holds prominent positions in international professional bodies like Committee on Space Research (COSPAR), IEEE and serves as a board member in many South-East Asian national programs. He is also a regular reviewer for various International Science Foundations like European Science Foundation, Dutch Research Council, Austrian Science Foundation, Research Council UK (RCUK), Swiss National Science Foundation, and Belgian Remote Sensing Program. His work has been cited in European and World Bank policy documents.

Prof. Pradhan provides advice as an expert on predicting spatial based natural hazard and risk modeling:

- Advisor for the Department of Mineral and Geosciences, Malaysia, where he evaluates the National Landslide Hazard and Risk Project, 2014 - 2017.
- Committee member, Malaysian National Slope Master Plan Board, Ministry of Science & Technology, 2016-2022.
- Elected member, Geospatial Working Group, Malaysia (national working group on the Geospatial Blueprint Beyond 2020).
- Scientific Convener for three high level scientific sessions at the European Geoscience Union (EGU 2010) General Assembly, Vienna (Austria), 02–07 May 2010.
- Past chair of the IEEE Geoscience and Remote Sensing Society Malaysia (IEEE-GRSS 2016 – 2017).
- Past member of the United Nations Outer Space Research Programme (UNOOSA 2008 – 2010)).

17. Involvement in Curriculum Development, Program Structuring, and External Academic Assessment

Prof. Pradhan has been extensively involved in curriculum development and academic program design across various institutions globally. His experience includes participation in the creation, revision, and evaluation of both undergraduate and postgraduate programs. His roles have spanned curriculum committee memberships, external assessments, and strategic input for academic accreditation purposes. Key involvements include:

Curriculum Development and Program Structuring:

- Curriculum Committee Member, *Master of Emergency Response and Planning*, Department of Biological and Agricultural Engineering, Faculty of Engineering, Universiti Putra Malaysia (UPM), Malaysia

- Curriculum Committee Member, *Master of Remote Sensing & GIS*, Department of Civil Engineering, Faculty of Engineering, Universiti Putra Malaysia (UPM), Malaysia
- Program Development Contributor, *Bachelor and Master of Information Systems Engineering*, Faculty of Engineering & IT, University of Technology Sydney (UTS), Australia
- Program Advisor and Developer, *Engineering Programs*, AIMST University, Malaysia
- Curriculum Contributor, *Master of Geotechnical Engineering & Tunneling*, Faculty of Engineering & IT, University of Technology Sydney (UTS), Australia
- Curriculum Advisor, *Geoinformatics for Natural Resource Monitoring and Management*, Amrita University, India
- Program Development Contributor, *Remote Sensing and GIS Program*, Amrita University, India

External Examiner / Academic Assessor Roles:

- External Examiner, Faculty of Engineering and Technology, Multimedia University (MMU), Malaysia – for Master and PhD Engineering Programs
- External Assessor, College of Built Environment, Universiti Teknologi MARA (UiTM), Malaysia – for academic program evaluation and review

This diverse portfolio of academic program development reflects Prof. Pradhan's multidisciplinary expertise and global experience in shaping forward-looking educational curricula aligned with industry and societal needs.

18. Publications:-

Prof. Pradhan has published 24 books and has contributed in more than 954 scientific papers. He has 55 highly cited papers in the WoS database.

[Scopus](#): Citations: 65,069; H-Index: 133

[Google Scholar](#): Citations: 90,434; H-index: 155; i10-index: 761

[Publons \(Web of Science\)](#): Citations: 53,767; H-index: 120

Publication	Quantity
Journal Papers	790
Books	49
Book Series	39
Book Chapters	63
Conference Proceedings/ seminars	245

/workshops	
Keynote/ Invited Talk	80

19. Identifiable Benefits Outside of Academia:

Prof. Pradhan has developed engineering software for a wide range of spatial analysis tasks including efficient processing of remote sensing data, mass movement detection, landslide hazard assessment, flood modelling, groundwater yield prediction, counting birds and bats in caves, forensic analysis on highways and others. Software he developed has been implemented by several SE Asian Government agencies, including: (i) Malaysian Remote Sensing Agency, (ii) Malaysian Meteorological Department, (iii) Korean Institute of Mineral and Geosciences, and (iv) PLUS Berhad (the largest highway operator company in Malaysia). Selected examples:

- Using GIS data, he has developed accurate predictive models for assessing the risk of road traffic accidents on Malaysian highways. It is based on advanced deep learning models such as recurrent neural networks. The models offer statistical relationships between road geometry features, traffic accident frequency, and injury severity. These models, and others he has developed for assessing traffic noise and carbon monoxide emissions, have contributed to solving challenges that have serious implications for human health in the environment of densely populated Malaysian cities. The models have been used by PLUS Berhad, the largest highway operator in Malaysia.
- ArcGIS-based toolbox for automatic landslide assessment. Used by highway concessionaires in Malaysia.

His research is cited in European and World Bank policy documents:

- ‘Soil Threats in Europe’—EU Law and Publications (Stolte et al. 2015).
- ‘Status of the World’s Soil Resources’—a publication of the Food and Agricultural Organisation of the UN. (Montanarella et al. 2015).
- ‘Climate Impacts in Europe’—EU Law and Publications.
- ‘Acting Today for Tomorrow: A Policy and Practice Note for Climate-and Disaster-Resilient Development in the Pacific Islands Region with Supporting Research, Analysis and Case Studies’ (World Bank publication).

20. Research Impact in Advancing of Knowledge in his Research Field:-

Prof. Pradhan is an expert in natural hazards, including spatial predictive modelling, hazard and risk assessments. He is one of the pioneers in combining spatial modelling and statistical and machine-learning algorithms in natural hazard predictions such as those for

landslides and floods. His major research contributions have combined 2 main discipline areas:

- Spatial analysis and modelling of earth and environmental applications.
- Computational models and techniques for extracting features from multi-sensor remote sensing data

22. List 30 Significant Journal Publications:-

1. Arachchige, S.M. and Pradhan, B. (2025) AI Meets the Eye of the Storm: Machine Learning-Driven Insights for Hurricane Damage Risk Assessment in Florida. *Earth Systems and Environment*. DOI: 10.1007/s41748-025-00571-9
2. Arachchige, S.M., Pradhan, B. and Park, H-J. (2025) A critical review of hurricane risk assessment models and predictive frameworks. *Geoscience Frontiers* (2025), doi: <https://doi.org/10.1016/j.gsf.2025.102012>
3. Joshi, A., Pradhan, B., Chakraborty, S., Gite, S. and Alamri, A. (2024) Deep-Transfer-Learning Strategies for Crop Yield Prediction Using Climate Records and Satellite Image Time-Series Data. *Remote Sensing*, 16(24), 4804. DOI: 10.3390/rs16244804
4. Dikshit, A., Pradhan, B., Matin, S.S., Park, H.-J., Maulud, K.N.A. (2024) Artificial Intelligence: A new era for spatial modelling and interpreting climate-induced hazard assessment. *Geoscience Frontiers*, 15(4), 101815 DOI: 10.1016/j.gsf.2024.101815
5. Pradhan, B., Lee, S., Dikshit, A., Kim, H. (2023) Spatial flood susceptibility mapping using an explainable artificial intelligence (XAI) model. *Geoscience Frontiers*, 14(6), 101625. DOI: 10.1016/j.gsf.2023.101625
6. Pradhan, B., Dikshit, A., Lee, S., Kim, H. (2023) An explainable AI (XAI) model for landslide susceptibility modeling. *Applied Soft Computing*, 142,110324. DOI: 10.1016/j.asoc.2023.110324
7. Abdollahi, A., Pradhan, B. (2023). Explainable artificial intelligence (XAI) for interpreting the contributing factors feed into the wildfire susceptibility prediction model. *Science of the Total Environment*, 879,163004. DOI: 10.1016/j.scitotenv.2023.163004.
8. Senanayake, S., Pradhan, B.* (2022) Predicting soil erosion susceptibility associated with climate change scenarios in the Central Highlands of Sri Lanka. *Journal of Environmental Management*, 308, 114589. DOI: 10.1016/j.jenvman.2022.114589
9. Dikshit, A., Pradhan, B.*, Santosh, M. (2022). Artificial neural networks in drought prediction in the 21st century-A scientometric analysis. *Applied Soft Computing*,

- 114, 108080. DOI: 10.1016/j.asoc.2021.108080
10. Abdollahi, A., Pradhan, B.*, Alamri, A. (2022). SC-RoadDeepNet: A New Shape and Connectivity-preserving Road Extraction Deep Learning-based Network from Remote Sensing Data. *IEEE Transactions on Geoscience and Remote Sensing*. DOI: 10.1109/TGRS.2022.3143855
 11. Dikshit, A., Pradhan, B.* (2021). Interpretable and explainable AI (XAI) model for spatial drought prediction. *Science of the Total Environment*, 801, 149797. DOI: 10.1016/j.scitotenv.2021.149797
 12. Senanayake S., Pradhan, B.* Huete A., Brennan J. (2021). Proposing an ecologically viable and economically sound farming system using a matrix-based geo-informatics approach. *Science of the Total Environment*, 794, 148788. DOI: 10.1016/j.scitotenv.2021.148788
 13. Naghibi S.A., Hashemi H., Pradhan, B. (2021). APG: A novel python-based ArcGIS toolbox to generate absence-datasets for geospatial studies. *Geoscience Frontiers*, 12(6), 101232. DOI: 10.1016/j.gsf.2021.101232
 14. Abdollahi A., Pradhan, B.* (2021). Integrated technique of segmentation and classification methods with connected components analysis for road extraction from orthophoto images. *Expert Systems with Applications*, 176, 114908. DOI: 10.1016/j.eswa.2021.114908
 15. Abdollahi A., Pradhan, B.* (2021). Urban vegetation mapping from aerial imagery using explainable AI (XAI). *Sensors*, 21(14), 4738. DOI: 10.3390/s21144738
 16. Matin S.S., Pradhan, B.* (2021). Earthquake-induced building-damage mapping using explainable ai (Xai). *Sensors*, 21(13), 4489. DOI: 10.3390/s21134489
 17. Jena R., Pradhan, B.*, Naik S.P., Alamri A.M. (2021) Earthquake risk assessment in NE India using deep learning and geospatial analysis. *Geoscience Frontiers*, 12(3), 101110. DOI: 10.1016/j.gsf.2020.11.007
 18. Dikshit A., Pradhan, B.*, Huete A. (2021). An improved SPEI drought forecasting approach using the long short-term memory neural network. *Journal of Environmental Management*, 283, 111979, DOI: 10.1016/j.jenvman.2021.111979
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