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BOOK OF ABSTRACTS

10th Conference on Sri
Lanka-Japan
Collaborative Research

16th January 2026



Sri Lanka-Japan Study Center
University of Peradeniya



10th Conference on Sri Lanka - Japan
Collaborative Research - 2025

Addressing Global Issues Through Collaboration
and Partnership

Book of Abstracts

Sri Lanka Japan Study Centre (SLJSC)
University of Peradeniya, Sri Lanka

January 16, 2026
University of Peradeniya, Sri Lanka

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10th Conference on Sri Lanka – Japan Collaborative Research, 2025

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Message from the Vice-Chancellor Professor W.M.T. Madhujith

University of Peradeniya

Sri Lanka-Japan Collaborative Research Conference (SLJCR) – 2025

It is with great pleasure that I extend my message on the occasion of the Sri Lanka–Japan Collaborative Research Conference (SLJCR) – 2025, held on 16 January 2026. Sri Lanka and Japan have shared a long-standing and mutually beneficial relationship since the post-World War II era. Over the years, this partnership has continued to flourish, transcending cultural, religious, and economic boundaries while expanding into diverse fields such as education, research, technology, and knowledge exchange. The Sri Lanka–Japan Collaborative Research Conference (SLJCR), organized by the Sri Lanka Japan Study Centre (SLJSC) of the University of Peradeniya, provides an important platform for academics and



researchers from both countries to disseminate research findings, exchange ideas, and engage in meaningful scholarly dialogue. It plays a significant role in strengthening academic cooperation and fostering future collaborative initiatives. The 2025 conference, conducted under exceptional circumstances following its postponement due to the Ditwa Cyclone, was successfully held in a fully online format. The conference focused on two key thematic areas—Humanities and Social Sciences, and Science, Technology and Engineering—highlighting the breadth and depth of collaborative research undertaken by scholars from Sri Lanka and Japan. I commend the Sri Lanka Japan Study Centre for its dedication, resilience, and commitment in organizing this important academic event despite the challenges encountered. Their efforts have ensured the continuity of scholarly engagement and the advancement of international academic partnerships. The conference has made a valuable contribution to enhancing academic exchange and strengthening research collaboration between Sri Lanka and Japan. Its successful completion stands as a testament to the perseverance and commitment of the academic communities of both countries, further deepening the enduring partnership that has long existed between Sri Lanka and Japan. I extend my sincere congratulations to the organizers, presenters, and participants, and I wish the Sri Lanka–Japan Collaborative Research Conference continued success in the years ahead.

Prof. Terrence Madhujith
Vice-Chancellor
University of Peradeniya

Message from Director Sri Lanka - Japan Study Centre

Sri Lanka-Japan Collaborative Research (SLJCR) - 2025 Conference

The Sri Lanka-Japan Study Centre (SLJSC) of the University of Peradeniya, established on 29 March 2013, continues to serve as a national platform for fostering collaborative research and academic exchange between Sri Lanka and Japan. Since its inception, the Centre has been actively engaged in promoting interdisciplinary research partnerships and disseminating knowledge through its flagship event, the Sri Lanka-Japan Collaborative Research Conference (SLJCR).



The SLJSC maintains strong collaborations with key institutions including the Embassy of Japan in Sri Lanka, the Japan International Cooperation Agency (JICA), the Association of Sri Lankan Academics in Japan, and several Japanese universities. Through these partnerships, the Centre has consistently facilitated academic mobility, research opportunities, and knowledge exchange for Sri Lankan undergraduate and postgraduate students, as well as academic staff.

The Sri Lanka-Japan Collaborative Research Conference 2025, held in January 2026, marks a unique milestone of the SLJSC. The conference, originally scheduled for December 2025, was postponed due to the Ditwa Cyclone and was subsequently conducted entirely online on the 16th January 2026. Despite challenges, the conference successfully brought together scholars under two broad thematic areas: Humanities and Social Sciences, and Science, Technology and Engineering, reflecting the multidisciplinary nature of Sri Lanka–Japan academic collaboration.

With a strong membership of over one hundred academics who have obtained postgraduate qualifications from Japanese universities, the SLJSC remains committed to strengthening existing partnerships while forging new avenues of collaboration.

I extend my sincere appreciation to all contributors, participants, and organizers whose efforts have ensured the success of this conference.

Dr. Poornika Seelagama
Director,
Sri Lanka Japan Study Centre (SLJSC)
University of Peradeniya

Message from Co-Chairs of SLJCR CONFERENCE 2025

Sri Lanka-Japan Collaborative Research (SLJCR) - 2025 Conference

It is with great pleasure and enthusiasm that we welcome you to the Conference on Sri Lanka–Japan Collaborative Research (SLJCR) 2025. Organized by the Sri Lanka–Japan Study Centre (SLJSC), University of Peradeniya, this conference continues to serve as a significant platform for strengthening academic and research partnerships between Sri Lanka and Japan.

Over the years, SLJCR has grown into a vibrant forum that brings together researchers, academics, industry professionals, and students to exchange ideas, present innovative findings, and foster meaningful collaborations across diverse disciplines. The 2025 conference marks another important milestone in our shared commitment to advancing scientific knowledge and international cooperation.

In an era shaped by rapid technological transformation and global challenges, collaborative research has become more important than ever. The continued partnership between Sri Lankan and Japanese institutions has created valuable opportunities for knowledge sharing, capacity building, and the development of sustainable solutions that benefit both nations and the wider global community. Despite the difficult circumstances experienced in recent months, the successful organization of SLJCR 2025 reflects the resilience and dedication of both the Sri Lankan and Japanese academic communities.

This year's conference showcases a broad range of research contributions that reflect emerging trends, interdisciplinary innovation, and the dedication of scholars committed to academic excellence. We are confident that the scientific sessions and discussions will inspire new perspectives, encourage future partnerships, and strengthen existing research networks.

We extend our sincere appreciation to all authors, reviewers, keynote speakers, organizing committee members, and participants whose efforts and support have made SLJCR 2025 possible. Finally, we wish SLJCR 2025 every success and look forward to witnessing the continued advancement of Sri Lanka–Japan collaborative research in the years ahead.

Conference Co-Chairs



Prof. Takehiro Morimoto
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University of Tsukuba,
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Co-Chair
Senior Lecturer
University of Peradeniya,
Sri Lanka

AGENDA
The Sri Lanka-Japan Collaborative Research Conference (SLJCR)
16th of January 2026

9.00 am - 9.05 am	Commencement Ms. Chamaali Dassanayaka Conference Secretary
9.05 am – 9.10 am	Welcome Speech Dr. Poornika Seelagama Director/ SLJSC, University of Peradeniya
9.10 am – 9.25 am	Address by Prof. Morimoto Takeshi, Co-Chair, SLJCR 2025 Associate Professor, Institute of Life and Environmental Sciences, University of Tsukuba, Japan
9.25 am – 9.35 am	Address by Vice Chancellor, University of Peradeniya
9.35 am – 10.05 am	Keynote Speech by Prof. Pathmasiri Jayasena Dean and Professor of Liberal Arts and Sciences, Fukuoka Women's University, Fukuoka, Japan
10.05 am – 10.15 am	Closing Remarks by Dr. Shyamantha Subasinghe Co-Chair, SLJCR 2025 University of Peradeniya
10.30 am onwards	Scientific Sessions

SRI LANKA-JAPAN COLLABORATIVE RESEARCH CONFERENCE-2025

January 16, 2026

Session 01: Humanities and Social Sciences

Session Coordinator: Ms. L.W.Wimaladarma

Panel of Judges:

1. Prof. Dilrukshi Rathnayake
2. Dr. Shyamantha Subasinghe
3. Dr. Poornika Seelagama

No	Code	Title	Presenter	Time
1	SS25_1	A Sociological Analysis Of The Impact Of The Nippon Scholarship Program On The Educational, Social, And Cultural Lives Of Sri Lankan Students	K.A.A .Madhawa	10.30 a.m - 10.45 a.m.
2	SS25_2	Siamese BiLSTM With Sinhala-Specific Transformer Embeddings For Offensive Language Detection	Ashen Ranaweera	10.45 a.m - 11.00 a.m.
3	SS25_3	Community Engagement In National Climate Change Responses: A Comparative Policy Analysis Of Sri Lanka And Japan	Warunie Kosgallana	11.00 a.m - 11.15 a.m.
4	SS25_4	A Systematic Bibliometric Analysis Of Highly Cited Articles On Mangrove Sustainability	Mangala Jayarathne	11.15 a.m - 11.30 a.m.
5	SS25_5	Educating The Future Generation Through Art: Raising Awareness Of The Business Heritage Of The World Heritage City Of Kandy	I.A.K. Wickramapala	11.30 a.m - 11.45 a.m.

Session 02: Science, Technology and Engineering

Session Coordinator: Ms. Chamaali Dassanayake

Panel of Judges:

1. Dr. Achala Pallegedara
2. Dr. Samith Buddika
3. Dr. Samal Dharmarathna

No	Code	Title	Presenter	Time
1	SCT25_1	MNL Approach for Evacuation Center Choice	H.M. Dilshan	10:30 a.m. - 10:45 a.m.
2	SCT25_2	Modeling Flood Evacuation Decisions Using The β -Scaled Recursive Logit Approach: A Case Study In Sri-Lanka	Sasini Wickramaratna Goonewardena	10:45 a.m. - 11:00 a.m.
3	SCT25_3	Child Injury Patterns In Japanese Schools: A Data-Driven Approach For Safety Management	Jayalath Edirisnghe	11:00 a.m. - 11:15 a.m.
4	SCT25_4	Spatio-Temporal Changes In Mangroves In Sri Lanka: Landsat Analysis From 1987 To 2022	Darshana Athukorala	11:15 a.m. - 11:30 a.m.
5	SCT25_5	Effect Of Glucose In Acetate Bath On Cuprous Oxide Thin Films	Chathuri Costha	11:30 a.m. - 11:45 a.m.
6	SCT25_6	Unmasking Hidden Food Malpractices Among Black Pepper Farmers In Sri Lanka	Samanmalee Amarawansha	11:45 a.m. - 12:00 p.m.
7	SCT25_7	A New Technology For Rapid Location Of Victims Buried In Disaster Zones	A Gunawardena	12:00 p.m. - 12:15 p.m.
8	SCT25_8	A Unified Framework For Evaluating Existing Counterfactual Methods With Feasibility Constraints And LLM-Based Explanations	Waruni Kokulundura	12:15 p.m. - 12:30 p.m.
9	SCT25_9	Emerging Halogenated Paks In Aquatic Ecosystems: Congener-Resolved Partitioning Among Water, Sediment, And Suspended Particles	Anura Upasanta Wickrama Archchige	12:30 p.m. - 12:45 p.m.

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HUMANITIES AND SOCIAL SCIENCES

A SOCIOLOGICAL ANALYSIS OF THE IMPACT OF THE NIPPON SCHOLARSHIP PROGRAM ON THE EDUCATIONAL, SOCIAL, AND CULTURAL LIVES OF SRI LANKAN STUDENTS

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Abstract : The Nippon Scholarship Program, facilitated through Japanese host families, represents a distinctive Sri Lanka–Japan educational collaboration that extends beyond financial assistance. Grounded in trust, reciprocity, and cross-cultural engagement, the program fosters long-term interpersonal relationships, cultural understanding, and gratitude among Sri Lankan students while contributing to people to people diplomacy between Japan and Sri Lanka. This study examines the educational, social, and cultural impacts of the Nippon Scholarship Program on Sri Lankan students and evaluates its contribution to strengthening Japan-Sri Lanka relations through educational and cultural diplomacy. A qualitative case study design was employed. Primary data were collected through auto ethnography and semi-structured interviews with 20 Nippon Scholarship recipients in the Udagama area. Used Purposive and Snowball Sampling to mitigate potential bias associated with auto ethnography, methodological triangulation was employed using multiple data sources. Secondary data were obtained from official Nippon Scholarship Program records and archival documents from the Kotte Mahindarama Temple, which functions as the principal coordinating institution and national headquarters of the Nippon Scholarship Program in Sri Lanka. Data were thematically analyzed using Gift Exchange Theory and Social Capital Theory as analytical frameworks. Thematic analysis of interview narratives and documentary sources revealed six major themes, Receiving and Adding Value to Support, Educational Development, Cultural Exchange and Engagement, Self-Confidence, Gratitude, and Friendship. Findings indicate that the scholarship enhanced academic performance, cultural awareness, self-confidence, and personal development among recipients. The program also fostered sustained interpersonal trust, reciprocal social bonds, and social capital, strengthening long-term cross-cultural relationships between Sri Lankan students and Japanese donors. The Nippon Scholarship Program promotes educational empowerment and meaningful cultural exchange while contributing to Japan-Sri Lanka soft power diplomacy. Beyond financial assistance, it offers a sustainable, trust-based model of international educational collaboration. The findings suggest that similar community embedded scholarship models could be adapted to support financially disadvantaged university students in Sri Lanka. Supported by the Japan International Cooperation Agency (JICA).

Keywords: Nippon Scholarship; Gift Exchange Theory; Social Capital; Cultural Exchange; Soft Power; Education

SIAMESE BiLSTM WITH SINHALA-SPECIFIC TRANSFORMER EMBEDDINGS FOR OFFENSIVE LANGUAGE DETECTION

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Abstract: The proliferation of offensive content on digital platforms remains a pressing global challenge, yet automated detection for low-resource languages such as Sinhala continues to lag behind due to limited annotated data and the absence of language-specific computational tools. This study addresses these gaps by introducing a Siamese Bidirectional Long Short-Term Memory (BiLSTM) network tailored for Sinhala offensive language detection. The work investigates how effectively a similarity-based Siamese architecture can distinguish between offensive and non-offensive Sinhala text when enriched with language-specific contextual embeddings, and examines whether incorporating aspect-level detection can improve interpretability by identifying lexical cues contributing to offensiveness. The proposed framework leverages AshenBERTo, a Sinhala-specific transformer model, to generate contextualized embeddings that capture subtle semantic and morphological nuances often overlooked by multilingual models. These embeddings are fed into a Siamese BiLSTM trained using contrastive and cosine embedding loss functions, enabling the model to learn fine-grained relational distinctions between paired text samples. An attention-based aspect detection module is integrated to highlight offensive words and phrases, improving transparency and supporting practical content moderation. Experiments conducted on the Sinhala Offensive Language Dataset (SOLD) show that the model achieves 86% accuracy, outperforming conventional architectures and state-of-the-art baselines including BiLSTM, CNN with mBERT/XLM-R embeddings, ChatGPT-4o, Claude 3.5 Sonnet, and Gemini 2.5 Pro. Training-validation curves further indicate stable convergence, with validation accuracy reaching 88%. Overall, this study establishes a strong benchmark for Sinhala offensive language detection and presents a replicable framework adaptable to other low-resource languages, contributing to safer and more inclusive digital platforms.

Keywords: Hate Speech; Offensive language; Sinhala; BERT; LSTM; Siamese Network

COMMUNITY ENGAGEMENT IN NATIONAL CLIMATE CHANGE RESPONSES: A COMPARATIVE POLICY ANALYSIS OF SRI LANKA AND JAPAN

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Abstract: Background: Sri Lanka and Japan, as island nations, are disproportionately vulnerable to climate change impacts despite lower contribution to greenhouse-gas-emissions (0.07% and 2.00% respectively). Each country has established policy frameworks under the United Nations Framework Convention on Climate Change (UNFCCC) to mitigate and adapt to these impacts. However, their approaches to community engagement differ due to contrasting socioeconomic, environmental, and governance contexts. Objective: To compare the integration of community engagement within national climate change policies of Sri Lanka and Japan, and to identify key strengths and gaps. Methods: A policy analysis was conducted using Walt and Gilson's Health Policy Triangle framework. Official national policies, adaptation plans, and strategies published within the last decade were reviewed, following a search in the Overton database using the terms "climate change" and "Lanka*/Japan*". Results: Japan's context supports community engagement through strong infrastructure, reliable climate information, and active municipal governance. However, aging communities and urban concentration limits community participation. Sri Lanka benefits from strong social networks and close community-environment relationships. However, limited financial resources and uneven access to climate information constrain action. In content, Japan embeds community roles within legally mandated local adaptation plans and public information platforms. Sri Lanka promotes awareness campaigns, community-based ecosystem monitoring and nature-based livelihoods but lacks binding provisions to empower communities beyond participation. As processes, Japan uses structured coordination between national and local governments. Sri Lanka has similar coordination between national bodies and regional climate-cells, but its bottom-up approaches remain uneven due to local capacity gaps. In actors, Japan's multi-stakeholder networks formalize citizen roles, whereas Sri Lanka relies strongly on Non-Governmental-Organisations and informal groups, resulting in actors with high-interest but low-power. Conclusion: Community engagement remains central to climate action in both countries. While Japan needs to overcome structural barriers to participation, Sri Lanka must strengthen binding provisions and financial support to translate community strengths into resilient national action.

Keywords: Community engagement; Climate policy; National responses; Sri Lanka; Japan; Health Policy Triangle

A SYSTEMATIC BIBLIOMETRIC ANALYSIS OF HIGHLY CITED ARTICLES ON MANGROVE SUSTAINABILITY

Mangala Jayarathne^{1*}, Takehiro Morimoto²

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This research provides a comprehensive bibliometric mapping of highly cited research on mangrove sustainability, highlighting global research trends, thematic priorities, leading contributors, and policy relevance. Using bibliometric analysis based on the SCI-E and SSCI databases of the Web of Science, a total of 433 highly cited articles published between 1994 and 2023 were analyzed through Bibliometrix (Biblioshiny) in RStudio, VOSviewer, and Excel. The results revealed that most publications emerged after the 2004 Indian Ocean tsunami, with keywords strongly linked to mangrove sustainability, climate change, blue carbon, and salt marshes. The leading journals were *Estuarine Coastal and Shelf Science*, *Aquatic Botany*, and *Global Ecology and Biogeography*. The analysis further indicated that these studies predominantly addressed three United Nations Sustainable Development Goals (SDGs): SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land). Australia, the USA, Belgium, the Netherlands, and China were the most productive and collaborative nations, with the University of Queensland and the U.S. Geological Survey recognized as leading institutions. Influential scholars such as Catherine E. Lovelock, particularly through the seminal 2011 study *Blueprint for Blue Carbon*, and Daniel A. Friess played a pivotal role in shaping the field, while Asia's research contributions have risen significantly in recent years. Overall, this research bridges the gap between scientific knowledge production and sustainability policy frameworks, offering valuable insights to guide future collaborations, knowledge dissemination, and research directions in mangrove conservation.

Research on mangrove sustainability is predominantly produced in Global North countries, as their institutions often function as central knowledge hubs with greater access to funding and advanced research capacities.

Keywords: Mangrove; Sustainability; Bibliometric analysis

Acknowledgement: This research publication is funded by the Japan Science and Technology Agency. Support for Pioneering Research Initiated by the Next Generation (JST SPRING), University of Tsukuba, Japan (Grant Number - JPMJSP2124).

EDUCATING THE FUTURE GENERATION THROUGH ART: RAISING AWARENESS OF THE BUSINESS HERITAGE OF THE WORLD HERITAGE CITY OF KANDY

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Abstract: Kandy, Sri Lanka's last royal capital and a UNESCO World Heritage City, contains a rich blend of indigenous and colonial architecture. Although conservation since 1988 has focused mainly on religious sites, the city's commercial heritage faces pressure from rapid urbanization and tourism. To raise awareness of this overlooked 'business heritage,' we conducted an outreach activity linked to our research on heritage preservation and tourism-related MSMEs. Students from three city schools were introduced to Kandy's tourism business heritage and trained to sketch a technical drawing of the Olde Empire Hotel (1898), a key commercial landmark. Using a participatory, action-based approach, the activity promoted direct observation and framed heritage as an artistic and experiential process, encouraging participants to shift from passive observers to active protectors. It also broadened awareness among micro-business owners, devotees, residents, and tourists about the value of business heritage within Kandy's historic urban landscape. Collaboration among heritage institutions, tourism authorities, university representatives, and educators highlighted the potential of creative engagement as both an educational and conservation tool. Overall, findings show that art-based participatory methods strengthen heritage awareness and collective responsibility, supporting sustainable preservation of business heritage in the Kandy Heritage City.

Keywords: Community archaeology; Heritage conservation; Kandy; Participatory learning; Tourism MSMEs

Acknowledgement: This research was supported by the Multidisciplinary Research Grant (No. 34, 2025), Revitalizing Heritage through Tourism MSMEs: Sustainable Tourism Approach to Balance Commodification

SCIENCE, TECHNOLOGY AND ENGINEERING

MNL APPROACH FOR EVACUATION CENTER CHOICE

H.M. Dilshan^{1*}, E.A.S.P. Rashmika¹, D.H.M.K.S. Thalgaskotuwa², W.R.S.S. Dharmarathna¹

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Abstract: Abstract: Preparing for flood disasters is essential to reduce their impacts and to support effective evacuation planning. Floods in Sri Lanka, especially in the Rathnapura District, often cause large-scale displacement and create challenges for managing evacuation centers efficiently. The proper operation of these centers plays a vital role in protecting lives and ensuring an organized emergency response. This study investigates the factors that influence people's choices of evacuation centers during flood events using a Multinomial Logit (MNL) modeling framework. Data were collected through structured house hold surveys of 451 households in flood-prone areas of Rathnapura, supported by secondary information from flood maps and shelter databases. The analysis considered variables such as distance from home, travel time, shelter capacity, accessibility, and facilities including water, food, electricity, sanitation, and medical care. MNL estimations were done through the utility maximization theory show that the alternative of relatives' and friends' homes are the most preferred shelter option, followed by religious sites and schools with nearly equal preference. Among all factors, distance and travel time were found to be the most influential, followed by shelter capacity. In addition, previous disaster experience and trust in disaster management authorities were found to affect the final choice. These findings suggest that improving accessibility, increasing shelter capacity, and building community trust are important steps to prepare for future floods and ensure faster, safer evacuations in flood-prone regions of Sri Lanka.

Keywords: Flood evacuation; Evacuation center choice; MNL modeling; Disaster mitigation

MODELING FLOOD EVACUATION DECISIONS USING THE β SCALED RECURSIVE LOGIT APPROACH: A CASE STUDY IN SRI-LANKA

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Abstract: Flood evacuation planning is a vital component of disaster preparedness, particularly in flood prone regions. In Sri Lanka, many districts frequently experience floods that threaten lives and property. The closest example is the unexpected floods in 2025. Traditional evacuation models often fail to capture the sequential and dynamic nature of evacuee decision-making during emergencies. To address this limitation, the present study develops a β -Scaled Recursive Logit (β -SRL) modelling approach to analyze and predict route choice behavior during flood evacuations and to identify key determinants influencing these decisions. The β -SRL model is a dynamic route choice framework that incorporates a sequential discount factor (β) which was the new factor that was updated from the Recursive Logit (RL) model to represent how individuals decide immediate and future considerations when selecting routes. Although previously applied to tsunami evacuation studies, its use in flood evacuation analysis remains limited, making this research both innovative and contextually significant. The study integrates primary data from evacuation surveys and GPS tracking with secondary data on traffic flows and flood risk maps from the Ratnapura district. Model estimation and validation are performed in RStudio platform to capture 447 samples with varying decision-making behaviors, where β values reflect the degree of forward-looking behavior from myopic ($\beta \approx 0$) to fully anticipatory ($\beta \approx 1$). By considering both immediate utilities (travel time, perceived risk) and future expected utilities (scaled by β), the model provides a realistic representation of evacuee behavior. The findings identify critical decision points where evacuees consider short-term convenience against long-term safety. Lower β values correspond to shorter, riskier routes, while higher β values indicate safer, risk-averse choices. Estimated β value was 0.46 suggesting a moderate level of myopic decision-making, indicating limited awareness of optimal evacuation routes. This research offers valuable insights for emergency planners to enhance evacuation efficiency, optimize route planning, and improve real-time flood warning systems. Ultimately, the β -SRL framework supports data-driven decision-making to strengthen community resilience and reduce evacuation times during flood emergencies.

Keywords: Decision-Making Dynamics; Evacuation Planning; Flood Management; Recursive Logit Model; Route Choice Behavior

CHILD INJURY PATTERNS IN JAPANESE SCHOOLS: A DATA DRIVEN APPROACH FOR SAFETY MANAGEMENT

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Abstract: School-related injuries remain a significant public health concern in Japan, affecting children across all school levels. This study examines national injury patterns using recent data from the Injury and Accident Mutual Aid Benefit System administered by the Japan Sport Council, focusing on injury frequency, severity, and age-specific characteristics. The results show a progressive increase in injury rates with age, where 7.20% of elementary school students, 14.89% of junior high school students, and 18.14% of senior high school students received benefit claims in 2022. Injury severity also increased at higher grades, reflected in average medical costs of ¥4,963, ¥6,724, and ¥11,079 respectively. Younger children sustained a higher proportion of head and facial injuries, especially during unstructured recess activities, indicating vulnerability to falls and playground hazards. In contrast, older students experienced a larger share of limb injuries associated with sports and extracurricular participation, suggesting risk due to physical impact and overuse. A sharp decline in 2020, during COVID-19 restrictions, demonstrates how exposure to school environments directly influences injury incidence. These findings underscore the importance of safety management strategies tailored to developmental stages and activity types. School health nurses play a vital role in early assessment and care, systematic reporting, and the development of preventive measures in collaboration with teachers and sports instructors. Strengthening their leadership in school safety education and injury surveillance can reduce preventable harm and support safer learning environments across Japan's educational system.

Keywords: school safety, injury prevention, Japan Sport Council, school health nurses, risk analysis

SPATIO-TEMPORAL CHANGES IN MANGROVES IN SRI LANKA: LANDSAT ANALYSIS FROM 1987 TO 2022

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Abstract: Mangroves in Sri Lanka provide critical ecosystem services, yet they have undergone significant changes due to anthropogenic and natural drivers. This study presents the first national-scale assessment of mangrove dynamics in Sri Lanka using remote sensing techniques. A total of 4670 Landsat images from Landsat 5, 7, 8, and 9 were used. This study aims to (i) detect mangrove distribution in Sri Lanka from 1987 to 2022; (ii) monitor and analyze mangrove changes in different scales, including national, provincial, district levels, and climatic zones; (iii) analyze the structure and stability patterns; and (iv) carbon storage changes of mangroves in Sri Lanka. A Random Forest classification model was applied. Using national-scale data enhanced mapping accuracy by incorporating region-specific spectral and ecological characteristics. The average overall accuracy of the maps was over 96.29%. The total extent of mangroves in 2022 was 16,615 ha, representing 0.25% of the total land of Sri Lanka. The results indicate that, at the national scale, mangrove extent increased from 1989 to 2022, with a net gain of 1988 ha (13.6%), suggesting a sustained and continuous recovery of mangroves. Provincial-wise assessments reveal that the Eastern and Northern Provinces showed the largest mangrove extents in Sri Lanka. In contrast, the Colombo, Gampaha, and Kalutara districts in the Western Province showed persistent declines. The top mangrove spatial structure and stability districts were Jaffna, Trincomalee, and Gampaha, while the most degraded mangrove districts were Batticaloa, Colombo, and Kalutara. The results of fragmented versus intact mangrove patches provide new empirical findings to global discussions on the balance between anthropogenic activities and natural climatic drivers related to mangrove resilience. Mangrove carbon storage increased from 12.1 Tg C in 1989 to 14 Tg C in 2022, indicating an approximately 16% increase over the study period. This study offers critical insights into sustainable mangrove management, policy implementation, and climate resilience strategies in Sri Lanka, and enables cross-country comparisons with other countries in the tropical regions.

Keywords: mangrove; Landsat; remote sensing; spatial analysis; fragmentation; Sri Lanka

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EFFECT OF GLUCOSE IN ACETATE BATH ON CUPROUS OXIDE THIN FILMS

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Abstract: Cuprous oxide (Cu_2O) is a non-toxic, low-cost, and green semiconductor material for solar energy applications due to its unique properties. Electrodeposited Cu_2O thin films grown in a slightly acidic bath exhibit p-type photoconductivity in addition to the n-type response, thereby reducing the overall efficiency of the fabricated Cu_2O -based devices. This dual behaviour can be illuminated by controlling the deposition bath kinetics. In this research, the effect of glucose in the acetate bath on the photoactive properties of electrode

posited Cu_2O in a photoelectrochemical cell (PEC) was explored. Electrodeposition of Cu_2O thin films on FTO was potentiostatically carried out in an acetate bath with different glucose concentrations (0, 0.01, 0.05 and 0.1 M) at -200 mV vs Ag/AgCl for 45 min. The stirring speed and temperature of the bath were at 50 rpm and 60 °C. Thin films were characterised using Current-Voltage (I-V) and Capacitance-Voltage (C-V) measurements in PEC, and UV-V is absorption spectra. Films deposited without glucose exhibited typical mixed behaviour, showing both n-type and p-type photoconductivity. However, the introduction of glucose completely suppressed the n-type photoresponse, producing films with exclusively p-type photoconductivity. An optimal photoresponse was obtained at a glucose concentration of 0.01 M, while higher concentrations decreased p-type photoactivity due to increased bath acidity. Although sodium acetate functions as a complexing agent in the bath, the additional complexation of Cu^{2+} ions with glucose slows down reduction kinetics and thereby favours the formation of Cu vacancies. A slight increase in bandgap energy could be observed for the samples prepared with glucose in the acetate bath. In conclusion, this study demonstrates that high-quality Cu_2O thin films showing exclusively p-type photoconductivity can be obtained by incorporating 0.01 M glucose into the acetate deposition bath.

Keywords: Cuprous oxide; Electrodeposition; Glucose; p-type photoresponse.

UNMASKING HIDDEN FOOD MALPRACTICES AMONG BLACK PEPPER FARMERS IN SRI LANKA

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Abstract: Food malpractices have emerged as a critical concern over the past decade, causing serious harm to both the economy and public health by introducing unsafe or fake products into the food supply. Although advanced detection methods exist, they remain costly and inaccessible in many developing countries, leading to underreporting of such practices. To examine the prevalence of food malpractices while minimising social desirability bias, a list experiment was conducted with 810 black pepper farmers in Matale District of Sri Lanka. The study focused on two specific malpractices, mixing pinheads which relates to quality, and washing mould-contaminated pepper which relates to safety. By relying on random assignments, the list experiment. allows consistent population-level prevalence estimation through differences in mean responses between control and treatment lists.

Using this approach, indirect questioning revealed that 45.2% of farmers engaged in pinhead mixing which is 27.5 percentage points higher than the direct questioning. Similarly, 35.7% of the farmers engaged in washing Mold-contaminated pepper which is 24.9 percentage points higher than the direct questioning. The findings uncover the hidden magnitude of food malpractices in the black pepper sector and demonstrate that conventional survey methods underestimate the prevalence of specified malpractices. Moreover, the study underscores the value of indirect questioning methods in revealing hidden practices within agricultural value chains, offering critical insights for policymakers and stakeholders seeking to ensure food quality and safety.

Keywords: Black pepper; Food quality and safety; List experiment; Malpractices

A NEW TECHNOLOGY FOR RAPID LOCATION OF VICTIMS BURIED IN DISASTER ZONES

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Abstract: Locating victims buried in the aftermath of natural disasters such as earthquakes and landslides, or in man-made disasters such as war zones, remains an unsolved global challenge. While technologies like ground-penetrating radar offer partial assistance, most rescue operations still depend heavily on traditional methods, including the use of sniffer dogs. This paper presents a novel technology that opens new possibilities for developing effective victim-detection systems. The method is based on an innovative application of resonant magnetic coupling combined with advanced signal-processing techniques. The concept has been rigorously validated through theoretical modelling and extensive electromagnetic simulations. Hardware development is currently underway, with practical demonstrations planned in the near future. Rather than focusing on a single product, this research aims to establish a new technological foundation with multiple potential applications. Detecting buried victims is only one example. Other promising areas include emergency communication in mines and voice or data communication in freshwater underwater environments. Preliminary studies indicate that a device as small as a mobile phone—small enough to be carried in a pocket or handbag—can be detected even when buried up to 45 m (≈ 150 ft) underground. Each device is assigned a unique identification code similar to the MAC address of a computer, enabling verification against national databases to assist in identifying trapped individuals. In field deployment, the detector can be mounted on a low-flying drone (approximately 2 m above ground) to rapidly scan large areas. The proposed technology has universal applicability and can benefit not only Sri Lanka and Japan but also any nation facing the growing risks of natural or man-made disasters.

Keywords: Resonant magnetic coupling; earthquake victims;

A UNIFIED FRAMEWORK FOR EVALUATING EXISTING COUNTERFACTUAL METHODS WITH FEASIBILITY CONSTRAINTS AND LLM-BASED EXPLANATIONS

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Abstract: Counterfactual explanations help identify how small changes in input features can alter a machine learning model’s prediction, supporting better understanding and transparency. Many existing methods, however, produce unrealistic or inconsistent results that ignore practical constraints. This study presents a modular, model-agnostic framework for generating and validating counterfactual explanations with an integrated rule-based feasibility module, an interactive user interface, and an embedded large language model (LLM) that interprets and explains the generated counterfactuals based on the user’s input data. The interface allows users to select from existing datasets, machine learning models, and counterfactual generation methods including Foil Trees, LORE, CLEAR, LIME-C, and SHAP-C. It also enables researchers and developers to extend the system by adding new options without altering the core architecture. The framework explicitly evaluates both correctness (whether the counterfactual successfully flips the model prediction) and feasibility (whether the suggested changes are realistic and actionable) of generated counterfactuals. Experimental results reveal a clear design-level trade-off. SHAP-C achieves 100% correctness but exhibits low feasibility (2.11%), whereas enforcing 100% feasibility leads to a reduction in correctness (2.42%). Similar trends are observed across other methods, confirming that optimizing correctness alone often degrades realism. These findings indicate that correctness and feasibility should be jointly considered during counterfactual generation rather than enforced after generation. Overall, the framework provides a practical approach to bridging research and real-world application in explainable artificial intelligence.

Keywords: Counterfactual Explanations; Explainable AI; Feasibility Constraints; Tree Ensembles; Large Language Models

EMERGING HALOGENATED PAHS IN AQUATIC ECOSYSTEMS: CONGENER-RESOLVED PARTITIONING AMONG WATER, SEDIMENT, AND SUSPENDED PARTICLES

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Abstract: Halogenated Polycyclic Aromatic Hydrocarbons (HPAHs), substituted with chlorine (ClPAHs) or bromine (BrPAHs), are recognized as emerging Persistent Organic Pollutants (POPs). While numerous studies have examined PAHs in urban and marine systems, data on their occurrence, partitioning, and transformation in Sri Lanka's brackish ecosystems remain limited. Negombo Lagoon, heavily influenced by anthropogenic activities, has not been adequately studied for parent and halogenated PAHs (p/HPAHs). This study analyzed 75 congeners of p/HPAHs in the Negombo Lagoon across four sites, considering three aquatic phases: particulate (PP), dissolved (DP), and sediment (SP). Target compounds were quantified using high-resolution gas chromatography coupled with Orbitrap mass spectrometry. The mean total concentrations (ng/L for water and ng/g for sediments) of PAHs, ClPAHs, and BrPAHs were 3.39 ± 1.42 , 0.02 ± 0.05 , and 0.005 ± 0.01 in PP; 84.37 ± 91.36 , 5.39 ± 10.69 , and 0.43 ± 0.85 in DP; and 85.01 ± 55.00 , 0.12 ± 0.13 , and 0.04 ± 0.03 in SP, respectively. The total concentration pattern showed DP > PP for p/HPAHs. The predominant congeners were naphthalene for PAHs, tetrachloropyrene (Cl₄Py) for ClPAHs, and α -bromonaphthalene for BrPAHs in water, while in sediments, they were phenanthrene, Cl₄Py, and 7-bromobenzo[a]anthracene, respectively. PAHs with 2–6 rings occurred in all phases, whereas HPAHs were less prevalent. Low Molecular Weight (L-MW) PAHs were mainly partitioned between PP and DP, indicating recent inputs and higher mobility due to greater solubility. High Molecular Weight (H-MW) PAHs predominantly partitioned between SP and DP, reflecting their hydrophobic nature, persistence, and strong sorption to organic matter.

Keywords: Halogenated PAHs, Negombo Lagoon, Partitioning Dynamics, Sediment, Water

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