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1st Ruhuna International Undergraduate Research Symposium 2022 RIURES'22

“Towards Broadening Horizons”

02nd November 2022

**Ruhuna Science Research Circle
Faculty of Science, University of Ruhuna
Sri Lanka**

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Proceedings of the 1st Ruhuna International Undergraduate Research Symposium
2nd November 2022

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Message from the Vice-Chancellor, University of Ruhuna

It is indeed a great pleasure to send my best wishes for the First International Undergraduate Research Symposium of University of Ruhuna, organized by the Ruhuna Science Research Circle (RUSREC) of the Faculty of Science. This symposium will provide an excellent scientific forum for undergraduates across the globe to communicate their research findings, share knowledge, and establish research collaborations expanding the boundaries of knowledge beyond the national level.

Importantly, RUSREC has given many opportunities for the students to develop their organizing, leadership, teamwork, and innovative skills. This conference would be a novel experience for them. Some of them will have a once in life time experience to organize and witness a conference of this nature.

I believe that the theme of the conference “Towards Broadening Horizons” is the most suitable and timely needed topic to initiate research dialogue for data driven development in our country. This is more so in the current context, when the country needs the wisdom and energy of the young generations to face the future challenges. As a leading national university, we are highly dedicated to generating new knowledge and creating skillful graduates. In achieving this goal, these kinds of events are of paramount importance.

Hence, I take this opportunity to thank the distinguished keynote speakers, reviewers, the RUSREC team, staff members of the Faculty of Science for their great effort to drive this event towards the success. Wholeheartedly, I congratulate all the undergraduate presenters, and wish them all success in future.

Senior Professor Sujeewa Amarasena
Vice Chancellor
University of Ruhuna
Sri Lanka

Message from the Deputy Vice-Chancellor, University of Ruhuna

It is a great honor and privilege to write a message for the International Undergraduate Symposium organized by RUSREC of the Faculty of Science. On this occasion, as the Deputy Vice Chancellor of the University of Ruhuna, I thank the RUSREC organizing committee of the International Undergraduate Symposium for their strenuous effort in organizing this event and facilitating the continuation of the faculty events amidst a difficult time. This will be a very good opportunity for undergraduates from various parts of the world to share their experiences in research.

Amid the varied and multi-faceted challenges posed by COVID-19 in 2020, which are still continuing, the economic and social infrastructure of the country experienced several setbacks in relation to both service delivery and development activities. However, the strong infrastructure base of the country served as a buffer and facilitated and continuation of economic activity, during this period of unique challenges. Recently it has been widely discussed the necessity to develop infrastructure in various segments in order to achieve the development goals. There is no gainsaying that knowledge generated is essentially required in every aspect of development in the current technology-oriented world. I believe the knowledge shared at this conference will further strengthen these efforts and this exercise will fit into the theme of the conference.

COVID-19 forced this society to recognize all aspects of working and living environments. In this scenario, society is realizing the importance of knowledge in all areas to accustom to the current situation. In such context, this conference will also offer some sort of guidance to work smart in a pandemic-stricken world.

Finally, I also wish to congratulate the young researchers who are presenting their valuable findings in this forum. Your work will definitely contribute to the search for solutions to the problems encountered by Sri Lanka as a nation.

I wish this conference a great success.

Deputy Vice-Chancellor
Prof. E. P. S. Chandana
University of Ruhuna
Sri Lanka

Message from the Dean, Faculty of Science, University of Ruhuna

It is with pleasure that I send this message as the Dean, Faculty of Science, University of Ruhuna, to the Proceedings of the First International Undergraduate Research Symposium 2022, organized by the Ruhuna Science Research Circle.

Research is generally considered one of the most important objective measures of a university's quality, prestige, and standing in the world. Research plays a pivotal role in the university's vision and mission. Developing and maintaining undergraduate research programs benefits students, faculty members, and the university and prepares the next generation of experts and researchers needed to meet the challenges of the world. Incorporating a research component along with a sound academic foundation enables students to develop independent critical thinking skills along with oral and written communication skills. The research process impacts valuable learning objectives that have lasting influence as undergraduates prepare for professional service. With that intension academics involve in guiding students to carry out meaningful research, development, and inventions & innovations in undergraduate study programmes.

This conference aims to bring together undergraduates involved in diverse fields so that they will have a forum to share their experiences, research results, methods, and developments in their contemporary applications as we move ahead in the 21st Century. The Proceedings book contains abstracts of such papers presented at the Conference.

I would like to thank all the members of the organizing committee for their hard work in making this event a success. My appreciation also goes to the Vice Chancellor, Deputy Vice Chancellor, all our faculty members, the sponsors, the distinguished participants, and all who have contributed papers to this conference. I wish that this international and multidisciplinary conference would be a productive event which provides young researchers a truly transformative experience through a variety of knowledge and perspectives to support their future endeavors.

Prof. D. H. N. Munasinghe
Dean,
Faculty of Science
University of Ruhuna
Sri Lanka

Message from the Patron, Ruhuna Science Research Circle

Along with my warm wishes as the Patron of the Ruhuna Science Research Circle (RUSREC) of the Faculty of Science of University of Ruhuna, it is a special privilege and a great pleasure to announce the First International Undergraduate Research Symposium of University of Ruhuna, organized by RUSREC. In 2015 RUSREC introduced the first undergraduate research symposium aiming to create a scientific forum for undergraduates of University of Ruhuna to confer their research findings while improving their inherent skills of independent research, communication, teamwork, and leadership skills under the patronage of former patron Prof. Saman Chandana Ediriweera. Continuous efforts of the RUSREC team brought the undergraduate research symposium in 2018 to the national level, and in 2022 RUSREC is reaching another important milestone in this venture, expanding its boundaries to the international level.

Generation of knowledge through research is highly important to the progression of a country, and the voice of the talented youth should be loudly heard. Enhancement of Innovative research skills of the undergraduates through continuous encouragement and providing opportunities for scientific communication is highly important to produce talented graduates. In this scenario, we believe that this conference will be a great opportunity for the undergraduates to speak the world, gain new knowledge, and cooperate with global research communities.

Organizing this event was really challenging and I would like to convey my sincere thanks to the RUSREC organizing team, editorial panel, reviewers, academic and non-academic staff members of the Faculty of Science, and the RUSREC undergraduate community for their invaluable support. While extending my heartiest congratulations I wish all the very best to the prospective presenters.

Senior Prof. P. Mangala C. S. De Silva
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