Kristu Jayanti College
AUTONOMOUS Bengaluru
Reaccredited A++ Grade by NAAC | Affiliated to Bengaluru North University

Department of Computer Science

in collaboration with

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on
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Keeping Pace with Technology

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FOREWORD

Fr. Dr. Augustine George, CMI
Principal, Kristu Jayanti College, Autonomous
Bengaluru

In an era characterized by rapid technological advancements and evolving societal demands, the field of computational intelligence stands as a beacon of innovation and insight. This conference serves as a testament to our collective commitment to explore, discuss and harness the transformative potential of computational intelligence across diverse domains. The theme of this conference, "Keeping Pace with Technology," encapsulates the essence of our shared journey towards understanding and leveraging computational intelligence in an ever-changing landscape. As we navigate through the complexities of artificial intelligence, machine learning, data analytics, and related disciplines, it becomes imperative for us to remain adaptive, resilient, and forward-thinking. This platform, provides an opportunity to engage in meaningful dialogues, exchange cutting-edge research findings and foster collaborations that transcend geographical boundaries and disciplinary silos. The conference proceedings present a diverse range of concepts, approaches and applications that reflect the inventiveness and vitality of the computational intelligence field.

As we embark on this intellectual journey, let's embrace the spirit of curiosity, collaboration, and amazement that defines our pursuit of knowledge. I hope these proceedings will provide us with the inspiration and tools we need to face the challenges of the digital age with compassion, creativity, and an unwavering commitment to quality. On behalf of the organizing committee, I extend my deepest gratitude to all contributors, reviewers and collaborating partners whose dedication and support have made this conference possible. I am confident that the insights gained and connections forged during this gathering will propel us towards new frontiers of discovery and innovation.

I wish you all a stimulating and rewarding experience at the International Conference on Computational Intelligence - Keeping Pace with Technology.

Fr. Dr. Augustine George, CMI
Principal, Kristu Jayanti College, Autonomous

ABOUT THE CONFERENCE

Computational Intelligence stands as a transformative paradigm in evolutionary computation, mirroring the intricate reasoning processes of human intelligence through pillars such as Neural Networks and Fuzzy Logic. This paradigm empowers computers to navigate and solve complex real-life problems, drawing insights from experimental data and observations. Across diverse sectors including healthcare, business, education, travel, gaming, and entertainment, Computational Intelligence, bolstered by advanced computing technologies, emerges as a rapidly evolving approach, facilitating autonomous information processing and applications.In the realm of intelligent and sustainable engineering solutions, Computational Intelligence plays a pivotal role, fostering continuous innovation, research, and development to tackle social, global challenges and enhance computational performance across various domains.

The ICCI-2024 converges scholars, researchers, engineers and scientists from across the nation to delve into the state-of-the-art developments, key methodologies, research trajectories, challenges, and unresolved issues within the field of Computational Intelligence. By providing a platform for the presentation of new advancements and research outcomes, this conference fosters collaboration and knowledge exchange, bridging the gap between academic research contributions and the practical needs of IT practitioners.Beyond academic pursuits, ICCI-2024 also explores the societal and commercial implications of Computational Intelligence, addressing the social, economic, and environmental facets of our nation with these innovative technologies.

Within these proceedings lie the insights, discussions, and contributions of our esteemed participants, encapsulating a wealth of knowledge, ideas, and solutions aimed at advancing the frontiers of Computational Intelligence and its impact on society.I extend my sincere appreciation to all attendees, speakers and contributors for their invaluable contributions to ICCI-2024 and I trust that these proceedings will serve as a source of inspiration and guidance for researchers, practitioners, and stakeholders alike in the ongoing journey of Computational Intelligence.

[Conference Convenors - ICCI 2024]

Dr. N.Karthikeyan

Dr. Margaret Mary T

Editorial - ICCI 2024

It is with an immense sense of satisfaction and happiness that we welcome you to the conference proceedings of the International Conference on Computational Intelligence - Keeping Pace with Technology. As the editors, we are honored to present the culmination of your research, insights, and innovations in the field of computational intelligence. This compilation stands as a testament to the collective wisdom and scholarly endeavors encapsulated within the diverse array of contributions by exploring the transformative potential of computational intelligence presented during the conference.

In an era defined by rapid technological advancements and evolving societal needs, your work serves as a testimony to the vital role of computational intelligence in shaping our understanding and utilization of emerging technologies. The theme of this conference, "Keeping Pace with Technology," encapsulates the imperative for continuous adaptation and innovation in the face of evolving technological landscapes. As we navigate through the complexities of artificial intelligence, machine learning, data analytics, and related disciplines, your research findings and insights serve as guiding beacons, illuminating pathways towards discoveries and applications. Your collective efforts have enriched the discourse surrounding computational intelligence and have the potential to drive meaningful change across various domains.

We extend our heartfelt appreciation to all authors for their scholarly contributions and to the organizing committee for their dedication to orchestrating this conference. We also extend our gratitude to the reviewers whose expertise and insights have ensured the quality and rigor of the contributions presented within these proceedings.May these conference proceedings serve as a source of inspiration and knowledge exchange, fostering continued dialogue and collaboration in the exciting field of computational intelligence. We are confident that your contributions will pave the way for further advancements and innovations, propelling us towards a future where technology and intelligence converge to address complex challenges and opportunities.

Wishing you all a fruitful and enriching experience as you engage with the insights and discoveries presented within these proceedings.

[Editorial Team]

Dr. Mary Jacob , Dr. Gopika S, Dr. Kalaiselvi K, Dr. Haripriya M P, Ms.Yashoda

ABOUT THE COLLEGE

Kristu Jayanti College, established in 1999, operates under the stewardship of the "BODHI NIKETAN TRUST," which comprises members of the St. Joseph Province of the Carmelites of Mary Immaculate (CMI). The institution is dedicated to empowering young minds to excel in life by fostering academic excellence, instilling values, nurturing civic responsibility, promoting environmental consciousness, and cultivating global competencies within a vibrant learning environment.

Affiliated with Bengaluru North University, the college has received prestigious accolades, including an 'A++' grade reaccreditation by NAAC in 2021 during its Third Cycle of Accreditation. Recognized by UGC under categories 2(f) & 12(B), the institution obtained Autonomous Status in 2013 from the University Grants Commission, the Government of Karnataka, and Bangalore University.
In the NIRF 2023 college rankings, Kristu Jayanti College secured its position among the top 100-150 colleges nationwide and stands as one of the five leading colleges in Karnataka. Notably, the School of Management's programs hold international accreditation from the Accreditation Council for Business Schools and Programs (ACBSP) in the USA. Furthermore, the college earned the prestigious 'DBT Star College' status under the strengthening component by the Department of Biotechnology, Ministry of Science & Technology, and the Government of India. It also clinched the first prize at the National Level for the 'Clean and Smart Campus Award' from Shri. Dharmendra Pradhan, Minister of Education, Govt. of India.

In the India Today - MDRA survey 2023, Kristu Jayanti College, Bengaluru, emerged as the Best Emerging College of the Century at the National Level across disciplines including Commerce, Science, Arts, and Social Work. Specifically, the survey ranked the college as the 4th Best in BCA, 12th Best in MSW, 20th Best in Arts, 21st Best in BBA, 22nd Best in Commerce, and 28th Best in Science and Mass Communication Programmes at the National level. Within Bengaluru, the College secured the 2nd position in MSW, 3rd in Commerce, Arts & BCA, 4th in Science, 6th in Mass Communication, and 7th in BBA programmes, demonstrating its commitment to excellence across various domains.

ABOUT THE DEPARTMENT

With a rich history spanning over two decades, the Department of Computer Science (UG) takes pride in offering the top-ranked BCA programme nationwide. Our BCA , BCA Analytics, BCA Cloud Computing, B.Sc Data Science, B.Sc IOT program are meticulously crafted to blend theory with hands-on experience, providing students with a comprehensive education. Equipped with a contemporary industry-focused curriculum, excellent problem-solving abilities, and effective communication skills, our students thrive in cross-disciplinary team environments, fostering innovation and academic excellence.

The millennial software developers represent the future visionaries of companies and nations. The Computer Academy , auspicious club of the department , boasting over 1600 members, serves as a vital bridge between technology and academia. Through a variety of programs including guest lectures, workshops, seminars, and industry visits, the department fosters a convergence of learning. Partnering with esteemed organizations like UiPath, Salesforce, and Oracle Academy, among others, the department addresses skill gaps in emerging technologies, ensuring a strong pipeline of graduates for the industry's future needs. The Knowledge Kindle Groups and Common Interest Groups of the department facilitate student connections and collaboration, while encouraging self-paced learning via MOOCs and NPTEL courses.

Amidst the challenges of the new normal, our swift transition from physical to virtual classrooms was facilitated by our in-house creation, the Kristu Jayanti Learning Management System (KJLMS). This web application empowers teachers to craft dynamic courses, extending learning opportunities to students anytime, anywhere. KJLMS supports a blended teaching-learning process, creatively organizing and executing both online and offline classes.

Our department's shared values shine through in our Social Outreach Programme (SOP) and Computer Literacy Programme (CLP), empowering students to embrace social responsibility and contribute to society's development. I'm proud to highlight that our BCA programme stands as a national benchmark, characterized not only by academic excellence but also by its significant impact on corporate sectors and national quality forums.

Message from the Dean, Faculty of Sciences

It is with great pleasure that I extend my warmest greetings to all delegates of the International Conference on Computational Intelligence. As we gather to explore the boundless realms of computational intelligence, it is evident that we stand at the precipice of transformative change in the modern world.

In today's ever-evolving landscape, computational intelligence has emerged as a powerful force reshaping industries, driving innovation and revolutionizing the way we perceive and interact with the world around us. From advanced machine learning algorithms to intricate neural networks, the tools and techniques of computational intelligence have permeated every facet of our lives, from healthcare and finance to transportation and beyond.

As you embark on this journey of discovery and discourse, I extend my heartfelt appreciation to the conveners, organizing team and editors of the conference proceedings book. Their dedication and unwavering commitment have been instrumental in orchestrating this gathering of minds and ideas.

I offer my best wishes for fruitful deliberations, insightful discussions and meaningful collaborations. May your shared exploration pave the way for new discoveries, innovations, and possibilities, propelling us towards a future of boundless potential.

Dr. Calistus Jude A.L.
Dean, Faculty of Sciences
Kristu Jayanti College, Autonomous

Message from the Head, Department of Computer Science

As the Head of the Department of Computer Science, I am inspired by the dedication and passion that each of you brings to this conference. Your commitment to advancing the boundaries of computational intelligence is not only commendable but also essential in shaping the future of our discipline. The abstracts presented within this book encapsulate the diverse perspectives, novel ideas and groundbreaking research that characterize computational intelligence today. From machine learning algorithms to neural networks, from data mining techniques to evolutionary computation, each abstract represents a step forward in our collective quest to unravel the mysteries of intelligence and cognition.

As you peruse through these abstracts, I encourage you to engage with the ideas presented, to question assumptions, and to explore new avenues of inquiry. The beauty of computational intelligence lies in its ability to transcend disciplinary boundaries and inspire interdisciplinary collaboration. Let us seize this opportunity to foster dialogue, to share insights, and to forge connections that will propel our field into uncharted territories.

I extend my deepest gratitude to the authors for their contributions, to the reviewers for their invaluable feedback and to the organizers for their tireless efforts in bringing this conference to fruition. May the abstracts contained within these pages serve as a source of inspiration and insight, guiding us towards a future where computational intelligence continues to redefine the possibilities of human achievement.

On behalf of the Department of Computer Science, I wish you all a stimulating and enriching experience at the International Conference on Computational Intelligence.

Prof. Sevuga Pandian A

Head, Department of Computer Science

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