

Conference Reports

Conference Report on the 2024 International Conference on Case-Based Reasoning (ICCBR 2024)

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THE 32nd International Conference on Case-Based Reasoning (ICCBR 2024) was held in Mérida, Mexico, from July 1 to July 4, 2024. As the premier international event dedicated to Case-Based Reasoning (CBR), ICCBR 2024 continued its tradition of fostering cutting-edge research and application development in the field. This edition marked the first time the conference was hosted in Mexico, underscoring a strategic effort to engage local researchers and highlight the significance of CBR in addressing global challenges. Under the theme “AI for socio-ecological welfare,” the conference featured a Special Track on Artificial Intelligence, designed to introduce Mexican researchers to the CBR paradigm while emphasizing the potential of AI in promoting social and ecological well-being. The event included keynote addresses from prominent experts, workshops on emerging topics like explainability in AI and the integration of CBR with Large Language Models (LLMs), as well as the Doctoral Consortium aimed at mentoring early-career researchers. Through its diverse program, ICCBR 2024 successfully brought together academics and practitioners to explore innovative solutions and expand the frontiers of CBR research.

The 32nd ICCBR was organized through the collaborative efforts of esteemed institutions and dedicated individuals. As Program Committee Chairs, we—Juan A. Recio-García, Mauricio G. Orozco-del-Castillo, and Derek Bridge (University College Cork, Ireland)—took responsibility for shap-

ing the academic program and maintaining the conference’s high standards of quality. We were supported by invaluable contributions from our colleagues, including Lukas Malburg (Trier University, Germany), who excelled in his role as Workshops Chair, and Juan Carlos Valdiviezo-Navarro (CentroGeo, Mexico), who expertly led the AI-Track.

The local organization was expertly managed by a team from the Tecnológico Nacional de México/IT de Mérida, including Local Chairs Nora Cuevas-Cuevas, Carlos Bermejo-Sabbagh, and Pedro Ortiz-Sanchez, as well as Ana Martín-Casado, from Universidad de la Rioja. These efforts were bolstered by the contributions of several volunteers from the AAAIMX Student Chapter, whose dedication was crucial to the event’s success.

The conference was supported by various sponsors and collaborating organizations, including Jarkol Technologies, Maikron, and the Instituto Tecnológico de Mérida. Additional sponsorship came from entities like the Honorary Chair BOSCH-UCM on Artificial Intelligence and the Science Foundation Ireland Insight Centre for Data Analytics, which ensured the financial and technical feasibility of the conference.

ICCBR 2024 faced the unique milestone of being the first edition of the conference held in Mexico. This presented both logistical challenges and opportunities, such as navigating local infrastructure while successfully broadening the global reach of the CBR community. By hosting the event in Mérida, the organizers aimed to engage Mexican researchers and foster greater regional participation in the field of CBR.



Figure 1. Poster session at ICCBR



Figure 2. Oral presentation at ICCBR

The overarching vision of ICCBR 2024 was to showcase the potential of AI for socio-ecological welfare, emphasizing the intersection of CBR and pressing global challenges. Through its meticulous organization, the conference aimed to inspire collaboration, innovation, and the application of CBR in diverse domains.

ICCBR 2024 featured two distinguished keynote speakers whose talks underscored the event's theme, CBR for Socio-Ecological Welfare, and offered deep insights into the current advancements and applications of CBR. Prof. Enrique Sucar-Sucar, a renowned figure in artificial intelligence, presented an insightful opening talk titled "Causal Models: Representation, Reasoning, and Discovery." In his presentation, Prof. Sucar-Sucar discussed the role of causal models in reasoning and discovery, emphasizing their potential to advance decision-making in complex systems. With a distinguished academic background that includes degrees from ITESM, Stanford University, and Imperial College, and a career adorned with numerous accolades such as the National Science Prize in 2016, Prof. Sucar-Sucar set the tone for the conference by highlighting the potential of CBR and AI in addressing socio-ecological challenges. Prof. Nirmalie Wiratunga delivered the closing keynote, "Intelligent Sharing of Explanation Experience by Users for Users: Case-Based Reasoning for Explanation Strategy Reuse." As a leader in AI and intelligent systems research, Prof. Wiratunga focused on the use of CBR for creating and reusing explanation strategies, with applications in retrieval-augmented Q&A

systems and Large Language Models. Her presentation provided thought-provoking perspectives on enhancing user-centric AI systems. As the head of the Artificial Intelligence & Reasoning Research Group at RGU and a frequent contributor to the ICCBR community, Prof. Wiratunga concluded the conference with insights that encouraged innovative approaches and applications in the field.

The conference program featured a series of thematic tracks and engaging sessions. The Retrieval track explored innovative methods for case retrieval, including integrating kNN retrieval with graphical models and visualization techniques for improving CBR comprehension. The Explainable AI track addressed the intersection of XAI and CBR, presenting semi-factual explanations and user-centered evaluation metrics for explainable systems. One of the highlights of the conference was the CBR and LLMs track, showcasing groundbreaking work on integrating CBR with Large Language Models, including retrieval-augmented generation and CBR frameworks for legal question answering.

In addition to these sessions, ICCBR 2024 included two dynamic workshops. The X-CBR workshop focused on explainability in CBR systems, featuring discussions on counterfactual explanations and hybrid approaches for complex problem-solving. The CBR-LLMs workshop explored the synergy between CBR and Large Language Models, presenting papers on topics such as persistent memory for LLMs and the role of CBR in augmenting LLM capabilities. These workshops provided a plat-

form for deep discussions and the exchange of ideas on emerging topics.

The Doctoral Consortium was another notable feature of the conference, providing early-career researchers with an excellent platform to present their work and receive constructive feedback from experienced mentors. Highlights of the consortium included discussions on using CBR for mental health interventions and innovative indexing techniques for case retrieval. Through this initiative, the conference fostered an environment of learning, collaboration, and mentorship, contributing to the development of the next generation of researchers in the field of CBR.

ICCBR 2024 saw the participation of 50 registered attendees, representing a diverse range of countries and regions. The majority of participants came from Mexico (12), followed by the United States (9), Germany (8), China (7), and Spain (6), with additional representation from the United Kingdom, Ireland, Italy, New Zealand, Norway, and Canada. Geographically, attendees were distributed across the Americas (22), Europe (27), and other regions (1), reflecting the truly international nature of the conference. The submission process demonstrated the growing global interest in CBR. A total of 74 papers were submitted, of which 29 were accepted, yielding an acceptance rate of approximately 39%. The program featured a balanced mix of oral presentations and poster sessions, showcasing a broad spectrum of research that ranged from theoretical advancements to practical applications.

The 32nd ICCBR conference embraced the theme *CBR for Socio-Ecological Welfare*, directing the community's attention to the growing potential of CBR in addressing global challenges, particularly in environmental sustainability, resource management, and social equity. This thematic focus was evident across the tracks and workshops, with presentations highlighting the integration of CBR with modern AI techniques, such as Large Language Models, and its application in diverse fields including mental health, urban planning, and legal systems. Emerging trends included a strong emphasis on explainability, as showcased in multiple sessions on Explainable AI, as well as the expanding role of hybrid approaches combining CBR with deep learning and neural networks.

The conference also featured interactive elements that enriched the experience for participants. Workshops

such as X-CBR and CBR-LLMs allowed attendees to engage deeply with specific topics, fostering meaningful dialogue and collaboration. The poster session provided an informal setting for researchers to present their work and exchange ideas, encouraging dynamic interactions among attendees. A key highlight of the conference was the Best Paper Awards ceremony, which recognized outstanding contributions in two categories. The overall Best Paper Award was presented to Nirmalie Wiratunga, Ramitha Abeyratne, Lasal Jayawardena, Kyle Martin, Stewart Massie, Ikechukwu Nkisi-Orji, Ruvan Weerasinghe, Anne Liret, and Bruno Fleisch for their work “*CBR-RAG: Case-Based Reasoning for Retrieval Augmented Generation in LLMs for Legal Question Answering*”. The Best Student Paper Award was given to Mirko Lenz, Lukas Malburg, and Ralph Bergmann for their contribution “*CBRkit: An Intuitive Case-Based Reasoning Toolkit for Python*”. These awards underscored the innovative and impactful research presented at the conference, celebrating both seasoned researchers and emerging talent in the field.

The success of the 32nd ICCBR conference would not have been possible without the dedication and efforts of many individuals and organizations. We extend our deepest gratitude to the organizing committee, whose tireless work ensured the seamless execution of the event. We are deeply grateful to our keynote speakers, Prof. Enrique Sucar-Sucar and Prof. Nirmalie Wiratunga, for sharing their insights and expertise, which

greatly enriched the conference program. We also thank the reviewers and program committee members for their diligent evaluations, ensuring the quality of the submissions. The conference was made possible through the generous support of our sponsors and partners. We acknowledge Jarkol Technologies, Maikron, and the Instituto Tecnológico de Mérida for their financial and logistical contributions. We also thank the Honorary Chair BOSCH-UCM on Artificial Intelligence and the Science Foundation Ireland Insight Centre for Data Analytics for their sponsorship and encouragement of academic excellence. Finally, we would like to recognize the efforts of the volunteers from the AAAIMX Student Chapter and ITM-ACM Student Chapter, whose enthusiasm and commitment ensured the smooth running of the event. Their contributions were instrumental in creating a welcoming and vibrant atmosphere for all participants. To everyone who played a role in making ICCBR 2024 a success, we extend our heartfelt thanks.

ICCBR 2024 marked a significant milestone in the evolution of the CBR community. This year’s event was impactful and unique, not only for its thematic focus on CBR for Socio-Ecological Welfare but also for its dynamic engagement across diverse topics and innovative intersections with AI technologies like Large Language Models. The location itself added a distinctive flavor, as hosting the conference in Mexico for the first time fostered regional engagement and encouraged new collaborations within the global CBR community.

The major takeaways from the conference highlighted the growing relevance of CBR in addressing complex, real-world challenges. Keynotes by Prof. Enrique Sucar-Sucar and Prof. Nirmalie Wiratunga emphasized the importance of integrating causal reasoning and explanation reuse into practical applications, setting the stage for future research directions. Sessions on topics such as hybrid CBR-AI systems, explainable AI, and retrieval-augmented generation showcased how CBR continues to evolve as a versatile and impactful methodology. The recognition of outstanding contributions through the Best Paper Awards further underscored the innovative work being conducted in the field, celebrating both seasoned researchers and emerging talents.

Looking ahead, the ICCBR community is excited to announce that the 33rd International Conference on Case-Based Reasoning will take place in Biarritz, France, from June 30 to July 3, 2025. With its picturesque setting and a reputation for fostering cutting-edge research, Biarritz promises to provide an inspiring backdrop for the next chapter in the ICCBR journey. We look forward to welcoming researchers, practitioners, and enthusiasts to continue advancing the frontiers of CBR in this vibrant and collaborative forum.

The conference proceedings, published by Springer as part of the collection *Lecture Notes in Artificial Intelligence (LNAI)*, are available at: <https://link.springer.com/book/10.1007/978-3-031-63646-2>

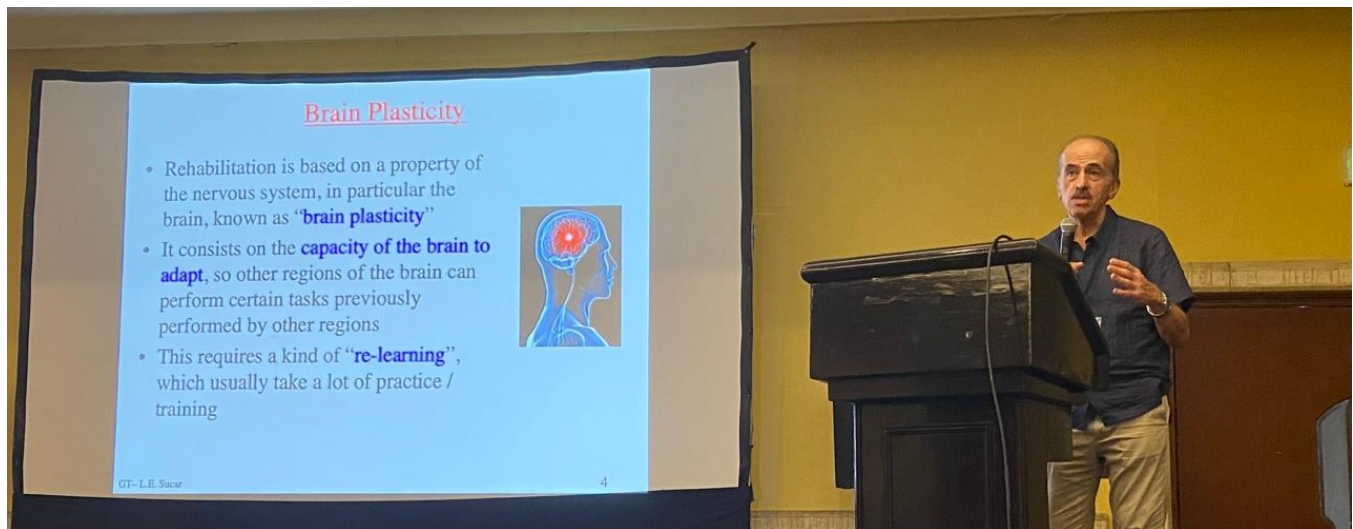


Figure 3. Opening keynote by Prof. Enrique Sucar-Sucar