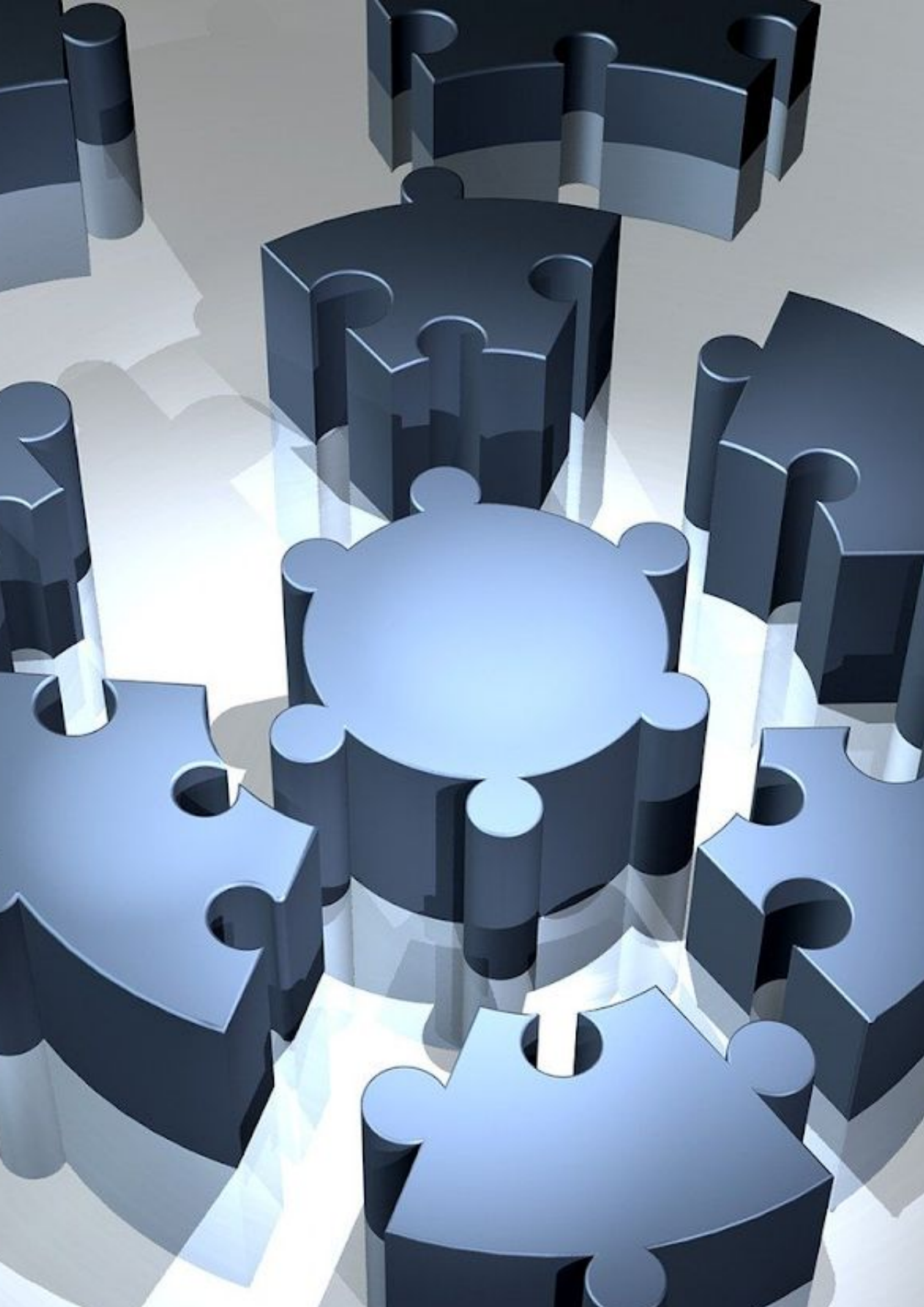

The International Semantic Intelligence Conference (ISIC) 2021

New Delhi, India, February 25-27, 2021

Proceedings

Preface

We are highly delighted to announce the commencement of the International Semantic Intelligence Conference (ISIC) as an international platform for the Artificial Intelligence, Machine Learning and the Semantic Web communities. It aims to bring together researchers, practitioners and industry specialists to discuss, advance, and shape the future of intelligent systems by virtue of machine learning and semantic technologies. ISIC 2021 presents a forum to publish cutting edge research results in intelligent applications. Due to many technological trends like IoT, Cloud Computing and Smart Devices, huge data is generated daily and at unprecedented rates. Traditional data techniques and platforms do not prove to be efficient because of issues concerning responsiveness, flexibility, performance, scalability, accuracy, and more. To manage these huge data sets and to store the archives for longer periods, we need granular access to massively evolving data sets. Addressing this gap has been an important and well recognized interdisciplinary area of Computer Science.

A machine will behave intelligently if the underlying representation scheme exhibits knowledge that can be achieved by representing semantics. Semantic Intelligence refers to filling the semantic gap between the understanding of humans and machines by making a machine look at everything in terms of object oriented concepts as a human look at it. Semantic intelligence helps us make sense of the most vital resource, i.e., data; by virtue of making it interpretable and meaningful. The focus is on information as compared to process. To whatever application, the data will be put to; it is to be represented in a manner that is machine-understandable and hence human-usable. All the important relationships (including who, what, when, where, how and why) in the required data from any heterogeneous data sources are required to be made explicit. The Artificial Intelligence technologies, the Machine Intelligence technologies, and the Semantic Web technologies together make up the Semantic Intelligence Technologies (SITs). SITs have been found as the most important ingredient in building artificially intelligent knowledge based systems as they aid machines in integrating and processing resources contextually and intelligently. The intersection of syntactic and the symbolic approaches to computing will give rise to knowledge-induced learning. This neuro-symbolic computing will allow us to achieve Artificial General Intelligence.

Furthermore, the semantic intelligence technologies maintain synergy with a wide spectrum of applications and a broad range of domains. In order to motivate the upcoming researchers who have a potential to grow, various special sessions have been organized by chairs across the globe. The themes of these sessions have been kept broadened in order to cater to the needs of horizontal expansion. ISIC 2021 has attracted 4 top-shot researchers as advisory. The conference committee has taken due care in finalizing the three keynote speakers and the eight invited speakers for the conference. They are diversified across the whole world and are eminent experts in their field. The conference has also tied up with 14 special sessions with overall 34 chairs. There are 21 members as chairs in the main conference organization and approximately 200 technical program committee members from various countries all around the world. ISIC 2021 showcases one workshop three tutorials. The conference depicts a high geographic diversity with members from around 40 different countries and high gender diversity with more than 35% women in its organization.

ISIC 2021 is Hybrid (Face-to-face and Online) in mode. Though the COVID-19 pandemic hits this initiative to some extent, we have brought out a quality proceeding. The review and selection process has ensured that only high quality manuscripts in the area of the conference are accepted for final publication. We are glad to share that we received a total number of 110 submissions in the main conference. There were 15 desk rejections by

the editors. Rest 95 were passed to reviewers. We invited reviewers to bid for submissions. We have managed to get three to six reviews for each submission; with each reviewer getting a maximum of four submissions to review. All reviews are from internationally renowned experts. Sixty one papers were accepted and finally fifty four papers are published in the proceedings. The accepted submissions are spread across 17 different countries with not more than 2-3 papers from any same organization.

The manuscripts have been divided into three tracks, namely the Research Track, the Trends and Perspectives Track, and the Applications and Deployment Track:

1. The Research Track

The Research Track incorporates papers that present novel work contributing significantly to the advancement of Semantic Intelligence. These submissions list the research gaps and research contributions filling the said gaps. A section comparing the results of the research with existing benchmarks is also presented.

2. The Trends and Perspectives Track

The Trends and Perspectives Track explores the state of the art in the mentioned disciplines.

3. The Applications and Deployment Track

The Applications and Deployment Track accepts papers showcasing the latest advancements and applications of semantic intelligence. Once any technology or methodology originates from the research community, its challenges and benefits are explored by its concrete usage in a practical setting. The application of any research in real-world use cases sets the stage for its visibility. The Applications and Deployment Track is exactly for this purpose. In addition to the real-world, the Applications and Deployment Track also includes resources such as the vocabularies, datasets, evaluation benchmarks, and the software.

A rose smells good because of the many petals it has. ISIC 2021 is the achievement of not a few people but a bigger team. The whole organizing committee had been incredibly supportive towards the successful organization of ISIC 2021. The general chairs would like to put forward gratitude to the organizing committee including the various track chairs, the technical program committee members, the external reviewers, and the contributors. We thank the many volunteers who effortlessly participated towards the successful culmination of the event.

January 2021

Sarika Jain
Sven Groppe

Organization

Advisory Committee

RajkumarBuyya, The University of Melbourne, Australia
Gurdeep Singh Hura, University of Maryland Eastern Shore, United States of America (U.S.A)
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Vishu Madaan, Lovely Professional University, India
Dilip Sharma, GLA University, India
Charu Gupta, Indraprastha University, India

Program

Keynote Speakers

- Ontology based Machine Learning in Semantic Audio Applications
  George Fazekas (Queen Mary University of London)
- Semantic Hybrid Multi-Model Multi-Platform (SHM3P) Databases
  Sven Groppe (University of Lübeck, Germany)
- Real Application of Machine Learning (REALM): Situation Knowledge on Demand (SKOD);
  Bharat Bhargava (Purdue University, Indiana, United States)

Invited Talks

- Data management in Connected environments
  Richard Chbeir (Universite de Pau et des Pays de l'Adour, Anglet, France)
- Legitimate Open-ended Dissemination of Personal Information
  Jayati Deshmukh, Srinath Srinivasa
- Theory Building with Big Data-Driven Research – An Editorial Perspective
  Arpan Kumar Kar (Department of Management Studies, IIT Delhi, India)
- Semantic Web End-User Tasks
  Roberto García (University in Lleida, Spain)
- Privacy-Preserving Data Sharing and Adaptable Service Compositions in Mission-Critical Clouds
  Bharat Bhargava, Rohit Ranchal, Pelin Angin
- Securing Intelligent Autonomous Systems Through Artificial Intelligence
  Ganpathi Mani (Qualcomm, Inc, San Diego, California, USA)
- Semantic Enablement for Integrated Sensor Web and Spatial Data Infrastructure: Location Intelligence from Sensors (LISENS)
  Devanjan Bhattacharya (School of Law and School of Informatics, University of Edinburgh, United Kingdom)

Workshop And Tutorials

- Workshop on Novelties in Open World
  Bharat Bhargava
- Exploration of Text–Object Relationships with Semantic Web (with special reference to Arabic language)
  Sree Ganesh Thottempudi
- Integrating Blockchain Technology with IoT
  Roshan Singh, Pranav Kumar Singh
- Validating RDF Data using Shapes
  Jose Emilio Labra Gayo

The Research Track

The Research Track incorporates papers that present novel work contributing significantly to the advancement of Artificial Intelligence.

- Semantic Ontology-Based Approach to Enhance Text Classification
  Sonika Malik, Sarika Jain
- RandomForest Enabled Collaborative COVID-19 Product Manufacturing/Fabrications
  Shajulin Benedict
- Ontology Versioning Framework for Representing Ontological Concept as Knowledge Unit
  Archana Patel, Sarika Jain
- Semantic Analysis of Sentiments through Web-Mined Twitter Corpus
  Satish Chandra, Mahendra Kumar Gourisaria, Harshvardhan GM, Siddharth Swarup Rautaray, Manjusha Pandey, Sachi Nandan Mohanty
- Analysis of Global Word Representations for Depression Detection
  Niveditha Sekar, S Chandrakala, G Prakash

The Trends and Perspectives Track

The Trends and Perspectives Track explores the state of the art in the mentioned disciplines.

- Knowledge Representation for Algorithmic Auditing to Detangle Systemic Bias
  Paola Di Maio
- ECC-BASED THREE-FACTOR AUTHENTICATION SCHEME FOR MULTI-SERVER ENVIRONMENT
  Rahul Kumar, Mridul K. Gupta, Saru Kuamri*
- An Ontology-based Sentiment Analysis Model towards Classification of Drug Reviews
  Sridevi. U.K, Shanthi. P
- An Algorithmic Representation of the Syntax Diagram of a Computer Programming Language
  Anichebe Gregory Emeka
- WEED SPECIES IDENTIFICATION IN DIFFERENT CROPS USING PRECISION WEED MANAGEMENT: A REVIEW
  Anand Muni Mishra, Vinay Gautam
- Medical Query Expansion using Semantic Sources DBpedia and Wikidata
  Sarah Dahir, Jalil ElHassouni, Abderrahim El Qadi, Hamid Bennis
- ANALYTICS AND STORAGE OF BIG DATA
  Shubham Upadhyay, Rakesh Manwani, Saksham Varshney, Sarika Jain
- CKD-TREE: AN IMPROVED KD-TREE CONSTRUCTION ALGORITHM
  Y Narasimhulu, Ashok Suthar, Raghunadh Pasunuri, V China Venkaiah
- Detection of COVID-19 Using the CT Scan Image of Lungs
  Ankita Bansal, Gaurav Thakur, Devang Verma
- Analysis of hospital reviews through sentiment analysis: An approach to aid patients in the times of COVID-19 pandemic
  Ankita Bansal, Manoj Maurya, Niranjan Kumar, Siddharth Tomar
- Deep Learning for Terrain Surface Classification: Vibration-based Approach
  Marcos Concon, W. K. Wong, Filbert H. Juwono, Catur Apriono
- AI Teaching and Learning KR, Neuro Symbolism and Reliability Notable Interlinked Gaps
  Paola Di Maio
- Analyzing the Punjabi Language Stemmers: A Critical Approach
  Harjit Singh

- Pragmatic Analysis of Classification Techniques based on Hyperparameter Tuning for Sentiment Analysis
  Charu Gupta, Prateek Agrawal
- Recognition of Facial Expression using Landmark Detection in Deep Learning Model
  Palak Girdhar, Vishu Madaan, Tanuj Ahuja, Shubham Rawat
- AI based management of Food Wastage
  Lakshit Sama, Aaisha Makkar, Polemoni Prokshitha, Devansh Dhaloria, Bhav Kirti Sharma

The Applications and Deployment Track

The Applications and Deployment Track incorporates papers showcasing the latest advancements and applications of Artificial Intelligence.

- Conceptual Framework Guided Legal Case Perspectives for Strategic Case Planning
  Krati Saxena, Sagar Sunkle, Vinay Kulkarni
- Bharathi –An Applied Semantic Intelligence Use Case for Public Data in India
  Asha Subramaniana, Manikanta Vikkurthia, Gunjan Pattnayaka, Akshay K S, Harika Vikkurthia
- Information Labelling of Medical Forum Posts by Non-Clinical Text Information Retrieval
  Amit Kumar Kushwaha, Arpan Kumar Kar
- OBD - II based Intelligent Vehicular Diagnostic System using IoT
  Siddhanta Kumar Singh, Ajay Kumar Singh, Anand Sharma
- Automatic Information Extraction and Inferencing System from Online News Sources for Substance Abuse Cases
  Judith George Joseph, Jestin Joy, Sreeraj M, Sanjay Govind, Shijas Muhammed T P, Tibi Sunni
- CoronaGo Website Integrated with Chatbot for COVID-19 Tracking
  Anil K. Pandey, R. R. Janghel, R. Sujatha, S. Sathish Kumar, T. Sangeeth Kumar, Jyotir Moy Chatterjee