A Report on National Seminar on "Information and Knowledge System" 10th & 11th March, 2023

A two-day National Seminar titled "*Information and Knowledge System (NSIKS-2023)* "was organized by the Department of Computer Science, Fakir Mohan University, Vyasa Vihar, Balasore-756019, Odisha on 10th & 11th March 2023 in collaboration with IEEE GRSS, Kolkata Chapter.

The National Seminar aimed to gather both researchers and practitioners in the fields of Information Systems, Artificial Intelligence, Knowledge Management and Decision Support. NSIKS seeks to promote discussions on various organizational, technological, and socio-cultural aspects of research in the design and use of information and knowledge systems in organizations.

Considering the large amount of data, information, and knowledge created and used in the organizations, especially with the evolution of information and communications technology platforms, organizations under the process of digital transformation constantly search for innovative concepts and creative applications. More importantly, NSIKS aims beyond the predominant role of technologies, seeking discussions on the essential interactions between individuals, who are the ultimate technology users.
Thrust areas discussed include, but are not limited to

- Knowledge sharing or transfer
- Knowledge Management
- Knowledge management systems
- Decision process in organizations
- Decision support systems
- Business process for Information and Knowledge systems
- Evaluation and measurement of Information and Knowledge systems
- Social and human factors in Information and Knowledge systems
- Artificial intelligence for information and knowledge systems
- Big data for information and knowledge systems
- Ontology for Information and Knowledge systems
- Security issues in information and knowledge systems

The national seminar with 120 participants started with the inaugural programme graced by Esteemed Vice-Chancellor, and Chief Guest, Prof Santosh Kumar Tripathy. The

distinguished guests Prof Santosh Kumar Tripathy, Hon. Vice-Chancellor, Prof. Munesh Chandra Adhikary, Chairman, PG Council, Prof. Ashish Ghosh, Guest of Honour, Prof. Pradipta Kumar Nanda, Keynote Speaker, Prof. Satchidananda Dehuri, Head & General Chair of the Seminar and Dr. Manaswini Pradhan, Convenor of the Seminar light the Lamp, took their seats on the dais followed by standing-up during the play of University Anthem offering of the bouquet to the guests by the volunteers.

The session stared with welcome address of the Convenor Dr. Manaswini Pradhan. She welcomed all the dignitaries, guests, faculty, colleagues from other departments, media representatives, and student presenters and all present in the programme to the session of the National Seminar with a brief introduction of the Chief Guest Professor Santosh Kumar Tripathy, Guest of Honour Prof. Munesh Chandra Adhikari, Chairman, Post Graduate Council, Guest of Honour Prof. Ashish Ghosh, Indian Statistical Institute, Kolkata, the Guest of Honour of the Seminar Prof. Pradipta Kumar Nanda, former Professor Department of Computer Science and Electrical Engineering, NIT, Rourkela and currently Pro-Vice Chancellor of Sikshya 'O' Anusandhan, Deemed to be University, Bhubaneswar.

The General Chair of the Seminar & Hod the Department, Prof. Sachidananda Dehuri, gave a brief introduction of the department, different activities of the department, the concept note, and spoke about theme of the national Seminar.

Guest of Honor Prof. Munesh Chandra Adhikari, Chairman, Post Graduate Council delivered his address. He talked about the State-of-the-Art research on emerging topics in knowledge and information systems.

Guest of Honour Prof. Ashish Ghosh delivered his address. He discussed about the science and art of obtaining information about an object, area, or phenomenon. A working remote sensor would generate tons of data, hence efficient processing and effective use of this data is very crucial. There will be data from everywhere like climate data, pollution data, satellite data, etc. Storing these data for analytics may not always be feasible and analyzing them in real time important. Further, Prof. Ghosh as a Chair of IEEE GRSS, Kolkata Chapter briefly discussed about the aim and objective of the said chapter with a request to participants with non-IEEE GRSS membership to become a member of the Chapter.

Guest of Honour Prof. Pradipta Kumar Nanda delivered his address. He discussed about Video object tracking is one the important problems in machine vision and has a wide variety of real world application with respect to Information and Knowledge System. The Souvenir of the seminar and Newsletter & Digital Explorer were released by our Honourable. Vice Chancellor.


Followed by the felicitation of the guests:

Hon. Vice-Chancellor, Professor Santosh Kumar Tripathy felicitated to Professor Ashish Ghosh,

Chairman, Post Graduate Council, Professor Munesh Chandra Adhikary felicitated to Professor Pradipta Kumar Nanda,

Dr. Manaswini Pradhan felicitated to our revered Vice-Chancellor Prof. Santosh Kumar Tripathy,

Prof. Satchidananda Dehuri, Head of the Department felicitated to Prof. Munesh Chandra Adhikari.




Hon. Vice-Chancellor and Chief Guest of the Seminar Prof. Santosh Kumar Tripathy, delivered his address. He mentioned that "*Information and knowledge system*" forms an integral part of the broader Learning Management System. He appreciated the seminar theme saying that the topic for discussion for today bears a greater relevance and the deliberations would certainly provide new dimension in the days to come.

The inaugural programme ended with proposed Vote of Thanks by Ms. Monalisa Jena, Co-Convenor of the Seminar.

Following the inaugural session there was a Technical Session 1 in first day chaired by Professor Sabyasachi Patnaik. In this Session the *Keynote* Speaker-1 was Prof. Ashish Ghosh, Machine Intelligence Unit, Indian Statistical Institute, Kolkata and Prof. Dalia Nandi , IIIT Kalyani, West Bengal was *invited Speaker.*

Professor Ghosh talked about "*Machine Learning and Remote Sensing"*. The speaker highlighted that some algorithms already have good capability of letting computers do the heavy thinking for us in case of smaller data. But, we are striving for more to deal with large volumes of such data in a short time. He explained the essence of the massive data, emphasized that we need to revisit old algorithms from statistics, machine learning, and data mining and big data analytics and improvise them to tame such big data. Major innovations in big data analytics are still to take place; emergence of such novel analytics is to come in near future from various domains.

Dr. Dalia Nandi, Department of Electronics and Communication Engineering, Indian Institute of Information Technology, Kalyani, West Bengal discussed about the "*Future Telecommunication Trends and Design Challenges: 5G and Beyond*". She explained that sixth generation is the era of seamless machine-to-human interactions, things intelligence, and unification of the virtual and physical world. The ultra-high reliability, ultra-high flexibility, ultra-high level of privacy and security, and ubiquitous coverage are the primary keys of the 6G vision.

These speeches were followed by questions, discussions, and viewpoints of the participants and speakers.

The post lunch Technical Session 2 was chaired by Dr. Asanta Ranjan Routray, Associate Professor. The *Keynote* speaker 2 in this Session was Prof. Pradipta Kumar Nanda**,** Pro-Vice Chancellor, Siksha 'O' Anusandhan, (Deemed to be University), Bhubaneswar.

Professor Pradipta Kumar Nanda talk was on the topic "*Video Object Tracking using Particle Filter and Feature Fusion*". He explained that efficient object modelling plays a crucial role in developing an efficient video tracking algorithm. He threw light about an effective target and scene model by adhering to the notion of feature fusion. The discussed proposed tracking algorithm was successfully tested, showed improved tracking accuracy as compared to existing algorithms.

Followed by the Technical Session 2, papers were presented by the paper contributors, researchers, authors, scientists; the Session was chaired by Dr. Minati Mishra, Assistant Professor. Paper contributors and presenters were Amit Kumar Bharati, Swatisipra Das, Lalitendu Rout, and Subendu Kumar Pati.

Amit Kumar Bharati in his paper throws light on "*Information and Knowledge Systems*" and views Information and Communication technology as one of the major key players in the development of social communication and the knowledge system which changes the creativity skill of pupils for national development. Information and knowledge management system consist of various technological implication which helps to efficient handling, preserve, and retrieve knowledge.

The paper presenter Swatisipra Das and Minati Mishra in their paper "*A Study on Blockchain-Cloud hybrid model-based Healthcare Systems*" analysed the block-chain cloud hybrid model in healthcare systems. The Block chain-Cloud combined model-based healthcare systems eliminate third-party dependency, reduce the implementation cost and provide better scalability to handle the continuously growing health records.

Lalitendu Rout, Manaswini Pradhan, Pramod Kumar Rout, and Basanta Mangaraj in their paper on "*Early Detection of Breast Cancer using Machine Learning: A Comparative Review*" examine the prediction performance of various state-of-the-art machine learning models and a decision support system based on these models that provided the predicted category along with a prediction confidence measure. In conclusion, they write, by building the ML-based decision support system with the optimal feature subset, the prediction

performance for breast cancer can be improved to 96% which means it can provide powerful assistance to doctors and patients.

Subendu Kumar Pati, K. Chand, and Minati Mishra in their paper on "*A State-of-the-Art of Steganography Techniques and Applications*" present that with the advent of the state-of-the-art computing and communication systems developments, one of the most challenging tasks in various organisation (commercial, non-commercial, business, government and military) is the transmission of secure data & information for an end-to-end users and multiple broadcasting. In conclusion, they write that steganography techniques will be analyzed, their strengths and weaknesses.

In Day 2, there was a Technical Session 3 chaired by Professor Sabyasachi Patnaik. In this Session the *Keynote* Speaker 3 and 4 were Prof. Pabitra Mitra, Department of Computer Science and Engineering, Indian Institute of Technology, Kharagpur, and Professor Susmita Ghosh, Department of Computer Science and Engineering, Jadavpur University.

Last day of the seminar started with the Keynote Speaker Prof. Susmita Ghosh, she talked on "Change Detection of Remotely Sensed Images". She explained that Remote sensing image change detection (CD) is an important application of remote sensing image interpretation that aims to compare and analyze two (or more) remote sensing images taken at different times in the same region and obtain change information about the ground object.

The next keynote speaker Prof. Pabitra Mitra was discussed about the "*Introduction of Machine Learning*". He explained that Artificial Intelligence, concerned with the design of algorithms that allow computers to evolve behaviors (learn) based on empirical data (experience). We need to learn incomplete information about the environment, a changing environment, use the sequence of percepts to estimate the missing details, hard for us to articulate the knowledge needed to build AI systems.

In the post lunch Session the Technical Session 4 was started with the *Invited Speakers* Dr. Alok Ranjan Tripathy, Department of Computer Science, Ravenshaw University, Cuttack, and Mr. Biswa Ranjan Das, Department of CSE, Aryan Institute of Engineering and Technology, Bhubaneswar. The session was chaired by Dr. Kamalakanta Chand, Former Scientist, PXE Chandipur, Balasore.

Dr. Alok Ranjan Tripathy, discussed on "Statistical Learning". He highlighted that Statistical learning theory is a framework for machine learning drawing from the fields of statistics and functional analysis. Statistical learning theory deals with the statistical inference problem of finding a predictive function based on data.

Mr. Biswa Ranjan Das discussed on "*Natural language processing* (NLP) ". The speaker mentioned about the role of machine learning and AI in natural language processing and text analytics is to improve, accelerate and automate the underlying text analytics functions and *Natural language processing* (NLP) features that turn this unstructured text into useable data and insights. Machine learning for NLP and text analytics involves a set of statistical techniques for identifying parts of speech, entities, sentiment, and other aspects of text. The techniques can be expressed as supervised or unsupervised machine learning.

Followed by the Technical Session 4, papers were presented by the paper contributors, researchers, authors, scientists; the Session was chaired by Dr. Minati Mishra, Assistant Professor. Paper contributor and presenters was Pramod Rout. He talked about *"Integration of AI with Blockchain".*

Pramod Rout in his paper on "*Integration of AI with Blockchain*" writes that Artificial intelligence (AI) and blockchain are the two disruptive technologies emerging from the Fourth Industrial Revolution that have introduced radical shifts in the industry. The amalgamation of AI and blockchain holds tremendous potential to create new business models enabled through digitalization.

This was followed by valedictory function. Certificates were distributed by the guests. The programme was ended with vote of thanks by Dr. Manaswini Pradhan, Convener of the Seminar.

Outcomes of the Seminar

The Seminar has provided a wide range of exposure to young students as well as researchers in the proposed research domain and promotes making linkages among Industry, Scientists, and Academicians. The challenges in the development of smart knowledge systems from various resources and their security issues in information, social and human factors in information and knowledge systems management can comprehensively be attainable.

The National Seminar "*Knowledge and Information System (NSIKS)*" provided a National forum for researchers and professionals to share their knowledge and report new advances on all topics related to knowledge systems and advanced information systems.

Publication

The accepted abstracts of National Seminar (NSIKS 2023) have been published through a Seminar Souvenir entitled "*Information and Knowledge Systems*".

The full papers of the accepted abstracts after peer review process and with less than 10% of plagiarism shall be published in a Scopus indexed Edited book schedule to be published by NOVA Science Publisher.

[Convenor]