

FOREWORD

Last few years of pandemic has made us aware about where we stand in terms of technological development and what we can achieve. During the pandemic time there were huge changes in teaching methods. The terms like work from home or online classes for school students were not there before pandemic but now they have become an integrated part of teaching. All these changes were possible only due to technology. Computer, Information Technology and Electronics are the main fields that have played significant role in bringing these changes. All these changes are dependent on technological advancement.

As there is a constant advancement in technology, consequently there is a lot of scope of research in this domain. Some research work presented by delegates at National Seminar on the theme "Emerging Trends of Technologies in Current Era" held at Sanatan Dharma College, Ambala Cantt on March 20, 2022, have been compiled in this proceeding.

One day National Seminar on the theme "Emerging Trends of Technologies in Current Era" is the output of tremendous effort put up by the organizing committee. It is organized by Department of Computer Science and Department of Electronics & IT and approved by Department of Higher Education, Haryana.

It gives me immense pleasure to know that participants and resource persons across the country have come together on a single platform to focus on "Emerging Trends of Technologies in Current Era". The relevance of the theme of the Seminar has drawn a huge response in terms of research papers and participants.

I would like to congratulate the editor Dr. Girdhar Gopal, Ms. Amandeep Kaur, Dr. Arti along with their dedicated organizing committee for the success of the Seminar.

I wish this Seminar proceedings will be of immense use for the readers and would stimulate further research in the domain of different technologies.

Dr. Rajinder Singh

Principal

Sanatan Dharma College
Ambala Cantt

PREFACE

The delegates from different states of India presented their insights at Department of Higher Education approved one day Online National seminar on "Emerging Trends of Technologies in Current Era". The aim of the seminar was to bring academicians, research scholars and experts from higher education institutes and industry under one roof together to debate and analyse emerging technology developments.

The webinar was conducted to make the participants up to date with the emerging trends of technologies in current era, to promote research in India to empower professionals and communities to meet the challenges in the changing work environment and to bring the Academicians and Computer Science & IT professionals together to discuss and implement latest technologies.

The participants and authors actively presented papers on the topics like cyber security, computer vision, augmented & virtual reality, data science, Cloud Computing and Big Data, Block Chain, Signal and Image Processing, Artificial Intelligence, Mobile Ad hoc Network etc. The one-day seminar revealed that there is so much advancement in the technologies that is being used in different domains. Some key aspects highlighted by esteemed resource persons were Challenges in mobile adhoc networking in which various adhoc networks their applications, different protocols of the network were discussed. Another resource person shared their insights in the area of future wearable technologies and threw light on 3D printing, wearable technologies 5G technology and many more. Similarly other recent technology and issues faced were discussed by other resource persons of the seminar.

I hope that knowledge shared in this seminar will be beneficial to the readers and encourage them to explore the different technologies and work more to bring change in the society.

Dr. Girdhar Gopal

Convener

Head, Department of Computer Science
Sanatan Dharma College, Ambala Cantt., Haryana

ACKNOWLEDGEMENT

I am grateful to Department of Higher Education Haryana for giving us opportunity to organise one day National Seminar on “Emerging trends in Technologies in Current Era” and collaborating with us. I am thankful to Dr. Rajinder Singh, Principal, Sanatan Dharma College Ambala Cantt for his support and guidance and for providing all the resources for successful completion of the seminar.

My heartfelt gratitude to Convener Dr. Girdhar Gopal, Head, Department of Computer Science for giving his valuable guidance and suggestions for organizing this seminar.

I also thank Organizing Secretary Ms. Amandeep Mehta, Assistant Professor, Department of Computer Science for working enthusiastically from beginning till end to successfully complete the event.

I thank all the members of organizing committee for putting their time and efforts in making this seminar possible. I thank all the Resource Persons who were kind enough to accept our invite for the seminar and shared their valuable knowledge with us. I also thank all the researchers and authors who sent research papers and also participated in the seminar and shared their knowledge and ideas. I hope they will keep up their work in future also. I also thank all the participants who joined the seminar and were actively listeners.

Finally, I thank all the non - teaching staff members who were active at the back end and took care of all the technical issues. This seminar would not have been possible without their contribution.

We are hopeful that knowledge shared in this seminar will motivate many of us to work ore in these areas and would come with up new ideas for contributing in advancements in technology.

Dr. Arti

Coordinator

Head, Department of Electronics & IT
Sanatan Dharma College, Ambala Cantt., Haryana

Esteemed Guests and Resource Persons

Inaugural Session

Chief Guest on the occasion: Prof. (Dr.) Anil Vohra
Dean of Colleges,
Professor, Dept. of Electronic Science,
Kurukshetra University, Kurukshetra

Technical Session- 1

Resource Person Dr. Himanshu Monga
Head, Department of Electronics & Communication
Engineering JNGEC, Sunder Nagar, Mandi

Technical Session- 2

Resource Person: Dr. Rajesh Khanna,
Professor, Department of Electronics &
Communication Engineering, TIET, Patiala

Valedictory Session

Chief Guest on the occasion: Prof. Rajender Nath
Chairman, Department of Computer Science
& Applications Kurukshetra University Kurukshetra

Patron:**Dr. Rajinder Singh**

Principal,
Sanatan Dharma College,
Ambala Cantt, Haryana

Organizing Committee**Convener****Dr. Girdhar Gopal,**

Head, Dept. of Computer Science

Coordinator**Dr. Arti,**

Head, Dept. of Electronics & IT

Organizing Secretary**Ms. Amandeep Kaur,**

Assistant Professor, Dept. of Computer Science

Organizing Committee Members

- Ms. Meenakshi Sharma, Assistant Professor, Dept. of Computer Science
- Dr. Ruchi Sharma, Assistant Professor, Dept. of Computer Science
- Dr. Poonam Rani, Assistant Professor, Dept. of Computer Science
- Ms. Kamna Billus, Assistant Professor, Dept. of Computer Science
- Dr. Minakshi Gupta, Assistant Professor, Dept. of Computer Science
- Ms. Shaina, Assistant Professor, Dept. of Computer Science
- Ms. Shikha Verma, Assistant Professor, Dept. of Computer Science
- Ms. Shiwani Soni, Assistant Professor, Dept. of Computer Science
- Mr. Somesh, Assistant Professor, Dept. of Computer Science
- Ms. Arti Sachdeva, Assistant Professor, Dept. of Computer Science
- Ms. Neha Dobriyal, Assistant Professor, Dept. of Electronics & IT
- Ms. Manu Gupta, Assistant Professor, Dept. of Computer Science
- Ms. Swati Bhardwaj, Assistant Professor, Dept. of Computer Science
- Ms. Simranjeet Kaur, Assistant Professor, Dept. of Electronics & IT
- Ms. Divya Singla, Assistant Professor, Dept. of Computer Science