

## PREFACE

Various delegates from different states of India shared their research insights at Directorate of Higher Education sponsored one day Online National Seminar on “Role of Digitization during COVID-19”. The main objective of this seminar is to bring academicians, research scholars and experts from higher education institutes and industry under one roof together to discuss and analyze the adoption of digital technologies in every industry.

Gone are the days when each researcher was restricted to only one core domain. Today is the era of interdisciplinary research and Digitalization has gained lot of momentum in the past decade. Technological advancements have had a huge impact around the globe, transforming the way people connect with others during pandemic. The participants and authors actively presented papers on the topics like COVID and Digital aspects of life, Changes in daily routine with IT during pandemic etc. The one-day Seminar revealed that there is need and lot of scope of using digital tools in today's world where everyone wants to interact online.

The Seminar has brought together renowned resource persons from reputed academic organizations to exchange and share new ideas and research results in all aspects of the seminar theme. Some key aspects highlighted by esteemed resource persons were Need of IT during and after pandemic, our life management with IT in educational aspects etc.

I am highly grateful to the Department of Higher Education (Haryana) for approving the One-day National Seminar on “Role of Digitization during COVID-19” in order to promote research in this domain. I also indebted to our ever-encouraging management and respected Principal for constant motivation and guidance. Ms. Amandeep Mehta, Co-convener of the Seminar have provided an intellectual platform to researchers from the area of Computer Science for sharing their valuable insights on the theme.

I also appreciate and thank the resource persons for sharing their knowledge on the topics relevant to the seminar themes. I would like to acknowledge the disciplined and tireless efforts of our organizing committee as a whole who left no stone unturned in making this event a grand success. I am sincerely thankful to the esteemed authors and participants for their contributions and wish that everyone should keep working and unravel new aspects of technology.

Finally, I am thankful to one and all, who have contributed directly or indirectly in making this seminar successful. We are hopeful that these contributions will enrich our knowledge and motivate many of us to take up these challenging application areas and would come with up new ideas for blending technology.

**Dr. Girdhar Gopal**  
Convener

## FOREWORD

COVID-19 has presented one of the most formidable challenges in recent history to governments, businesses, and society. Many consider it to be the ultimate tipping point for the 21st-century. The pandemic is a wake-up call for every industry. It is also a watershed moment that will signal the fast-track acceleration process for digitization throughout society. Technological advancements during Pandemic have revolutionized the methods of communication across the world. In this period of emergency due to the Covid-19, every individual focused on connectivity and accessibility. It is clear to everyone how much the use of digital technologies has increased in this period of crisis. But Digitalization is not only about infrastructures, it is also about the use of these technologies and about digital skills. With the Covid-19 crisis, schools were closed from one day to another. Teachers had to apply methods of distance learning. Offices are closed and working from home.

As digital tools are expanding exponentially, consequently there is a lot of scope of research in this domain. Some research work presented by delegates at National Seminar on the theme “Role of Digitization during COVID-19” held at Sanatan Dharma College, Ambala Cantt on June 20, 2021, have been compiled in this proceeding.

One day National Seminar on the theme “Role of Digitization during COVID-19” is the output of tremendous effort put up by the organizing committee. It is organized by Department of Computer Science and is sponsored by Directorate 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 “Role of Digitization during COVID-19”. 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 along with their dedicated organizing committee for 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 Digitization.

**Dr. Rajinder Singh**  
*Principal*  
Sanatan Dharma College  
Ambala Cantt

## **Esteemed Guests & Resource Persons**

1. **Prof. Dinesh Kumar**  
Vice Chancellor, JC Bose Univ. of S&T,  
YMCA, Faridabad
2. **Prof. Maninder Singh**  
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3. **Prof. Rakesh Kumar**  
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4. **Dr. Ashwani Kush**  
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5. **Prof. Rajesh Kumar Bhatia**  
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### **Patron**

**Dr. Rajinder Singh**  
Principal

### **Convener**

Dr. Girdhar Gopal

### **Co-Convener**

Ms. Amandeep Mehta

## **Organizing Committee**

Ms. Meenakshi Sharma  
Dr. Poonam Rani  
Ms. Kamna Billus  
Ms. Shaina  
Ms. Rashi  
Mr. Somesh

Dr. Ruchi Sharma  
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