## AMOUT THE INSTITUTE

National Institute of Technology Durgapur (NITD) is a leading technical institute offering undergraduate, postgraduate and doctoral programmes in various disciplines of engineering, technology, science, social science and management. NITD was established as a Regional Engineering College (REC) in 1960 as a joint venture of the Government of India and Government of West Bengal. REC Durgapur was converted to NIT Durgapur under the full administrative and financial control of the Ministry of Human Resource Development of Government of India with a Deemed University status on 3rd July, 2003. Subsequently NITD has been given the status of a University by the UGC Act. The Institute was declared an Institute of National Importance by the Government of India on August 15, 2007.

The city of Durgapur is recognized as one of the fastest developing Tier–II cities in the national scenarios. Durgapur is situated at a distance of about 180 KMs from Kolkata. It is located right on the major railway and expressway (NH-2) connecting Kolkata to Delhi and Durgapur can be reached from Kolkata (and vice versa) in ~ 2 hrs. 30 minutes.

## ABOUT THE DEPARTMENT

The Electrical Engineering course was initiated along with the Institution in 1960. Besides UG and PG courses, the Department also offers Ph.D. program. A good number of Ph.D. degrees have been awarded under the supervision of the faculty members of the Department and a number of students are perusing for their Ph.D. degrees. The Department, over the years, has successfully completed number of sponsored and consultancy projects. Theoretical and experimental investigations are being carried out in the areas like power systems, control systems, power electronics & machine drives, high voltage, instrumentation etc. Since inception the department is continuously contributing novel and innovative ideas in Electrical Engineering to keep pace with the latest technological developments.

The department regularly organizes invited lectures by experts from academic and R&D institutions as well as industries in various fields of Electrical Engineering. The Department is well equipped with highly sophisticated and modern laboratories

Department of Mathematics, started functioning from the year 1960 when the Institute was established as R.E. College Durgapur. Mathematics being the most basic of sciences and the backbone of all engineering disciplines the Department started to shape the young engineers of the country since the inception of the Institute.

After the transformation from R.E. College to National Institute of Technology Durgapur, the Department has undergone many changes. At present with nine faculty members the Department is running two PG Courses – M.Sc. in “Mathematics” & M. Tech. in the “Operations Research”. Apart from teaching faculty members are actively engaged in Research. Presently there are approximately 58 full time and professional /part time Scholars. The Department has the vision of contributing to the nation through quality education & Research in Mathematics.

## ABOUT THE CONFERENCE

Computational Intelligence (CI) in general, is the ability of a computer to learn a given specific task from the available resources. The resources can be data, information, images, or experimental observation. More specifically, computational intelligence is developed with different nature-inspired approaches to address complex real-world problems to which mathematical or traditional modelling fails to provide satisfactory results. This may be due to the complexity and non-linearity, may be highly uncertain, or the process might be stochastic in nature.

Different techniques of computational intelligence are close to the human’s way of reasoning and are being applied across all the disciplines, such as Electrical Engineering, Electronics Engineering, Computer Science & Engineering, Mechanical Engineering, Chemical Engineering, Civil Engineering, Instrumentation Engineering, Physics, Chemistry, and even in the area of Social Science and Language.

Traditionally, Computational Intelligence applies a combination of following complementary techniques. The fuzzy logic is useful for enabling the computer to understand natural phenomena. Evolutionary computing is inspired by the process of natural selection. The artificial neural networks used to learn a specific task from the training data. Finally, the learning theory and probabilistic methods of CI helps in dealing with uncertainty. Very recently, explosive research work is being performed in the extended version of artificial neural networks, this is being popularly known as Deep Learning. Nowadays, deep learning has become the core method for artificial intelligence. In fact, some of the most successful AI systems are based on computational intelligence.

## OBJECTIVE OF THE CONFERENCE

This Conference will provide an excellent forum for the scientists, researchers, engineers and industrial practitioners throughout the nation to exchange the latest technology advancement as well as to discuss the future directions, trends in Engineering & Engineering Sciences. This course is structured to give a wide exposure on Innovation and the application of soft computing and optimization techniques

## WHO CAN ATTEND NCCI 2022

NCCI 2022 is aimed to attract and bring together Faculty Members, Scientists, Engineers, Technologists, Research Scholars and PG students from Academic and Research Institutions and Industries. The participants will get new insights and knowledge about the topic through close interactions/discussions with the Scientists and Experts of the respective field.

## CALL FOR PAPERS

In this conference, there will also be a scope of paper presentation among the participants of NCCI 2022 covering the theme of the course. No extra fee will be charged for paper presentation. **The last date of paper submission: March 05, 2022**

Prospective authors are invited to submit their original technical papers for publication in the course proceedings and for oral presentation. All submissions should be in standard IEEE format with a maximum paper length of four (4) printed pages. Authors should send PDF files only for review ***by E-mail to:*** **nitdgp.ee@gmail.com**

**TOPICS TO BE COVERED BUT NOT LIMITED TO**

The main focus of the course will be on the following topics:

- Energy efficiency and sustainability in IoT
- Sensing, Signal Processing, Actuation and Analytics in Small and Large-scale pilots
- Security and Privacy in IoT
- Human Interaction with IoT
- Novel Applications of IoT in Verticals (e.g., industrial, rural, business processes, etc.)
- Societal Impacts and Ethical Implications of the IoT
- Electronics and Signal processing for IoT
- Big Data Modeling and Prediction
- Data Analytics and Machine Learning
- Fuzzy control and intelligent systems
- Fuzzy pattern recognition
- Fuzzy systems for robotics
- Neural network theory and architectures
- Rough sets and rough data analysis
- Type 2 fuzzy logic
- Machine Learning
- Intelligent Systems
- Web Intelligence Applications & Search
- Soft Computing
- Probabilistic Reasoning
- Hybrid intelligent systems
- Morphic Computing
- Wavelet
- Signal or Image Processing
- Vision Recognition and Robotics
- Heuristic and AI Planning Strategies and Tools

**REGISTRATION & REGISTRATION FEES**

(i) No registration fees for participation
(ii)The registration of participants will be done through the link https://forms.gle/iaYJJ9k6Wzzyj9s79

(iii) Publication of Paper: Industry: Rs. 1000.00
Academic / R& D Institution: Rs. 500.00
Research Scholar/ Post Graduate Student: Rs. 500.00
Payment may please be made by DRAFT in favour of "**CEP NIT DURGAPUR**" Payable at Durgapur

**LAST DATE OF ONLINE REGISTRATION: March 07, 2022**

**PLATFORM:** Google Meet/ MS Team/ Webex

**SPONSORSHIP**

- Proceedings Back Cover: Rs. 2000.00
- Proceedings Inside Cover: Rs 1000.00
- Proceedings Full Page: Rs. 5000.00
- Proceedings Half Page: Rs 3000.00

**RESOURCE PERSONS / INVITED TALK:**

**INVITED TALK**

Dr. D. Datta, BARC
Prof. M. Mitra, IIEST Shibpur
Dr. Debi Prosad Dogra, IIT Bhubaneswar.
Dr. Animesh Mukherjee, IIT Kharagpur
Prof. Asim Datta, Tezpur University
Dr. D.M. Vinod Kumar, NIT Warangal
Prof. Niranjan Kumar, NIT Jamshedpur
Dr. K. Mondal, IIT (ISM) Dhanbad
Dr. K. Boopathi, Director & Division Head NIWE, Chennai

**ORGANIZING COMMITTEE**

**Patron:** Director, NIT Durgapur

**ADVISORY COMMITTEE:**

Prof. P. Kumbhakar, Dean (Academic Research)
Prof. K. C. Ghanta Dean (R & C)
Prof. R Mahapatra, Dean (Student Welfare)
Prof. T. Mandal (Chairman CEC)

**Chairman:**
Prof. S. N. Mahato, Head, Department of Electrical Engineering
Dr. L. K. Dey, Department of Mathematics

**TECHNICAL COMMITTEE**

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# NATIONAL CONFERENCE

on

# Computational Intelligence

## (Online Mode)

# (NCCI 2022)

**March 10-12, 2022**

**Secretaries:**
Dr. Partha Sarathee Bhowmik
Prof. Samarjit Kar


**Organized by**
**Department of Electrical Engineering &**
**Department of Mathematics**
**National Institute of Technology Durgapur**
**Mahatma Gandhi Avenue, Durgapur 713 209.**
**Website: http://www.nitdgp.ac.in**
**E-mail: nitdgp.ee@gmail.com**
**Tel: +91-343-2754327 / Fax: +91-343-2547375**