



CENTER FOR NON-DESTRUCTIVE EVALUATION
INDIAN INSTITUTE OF TECHNOLOGY MADRAS



***Training on
Digital Radiography - Digital Detector Arrays (DDA) &
Computed Radiography (CR)***

**September
1-5,
2025**

***Organized by the
National Consortium for Non-Destructive Evaluation***



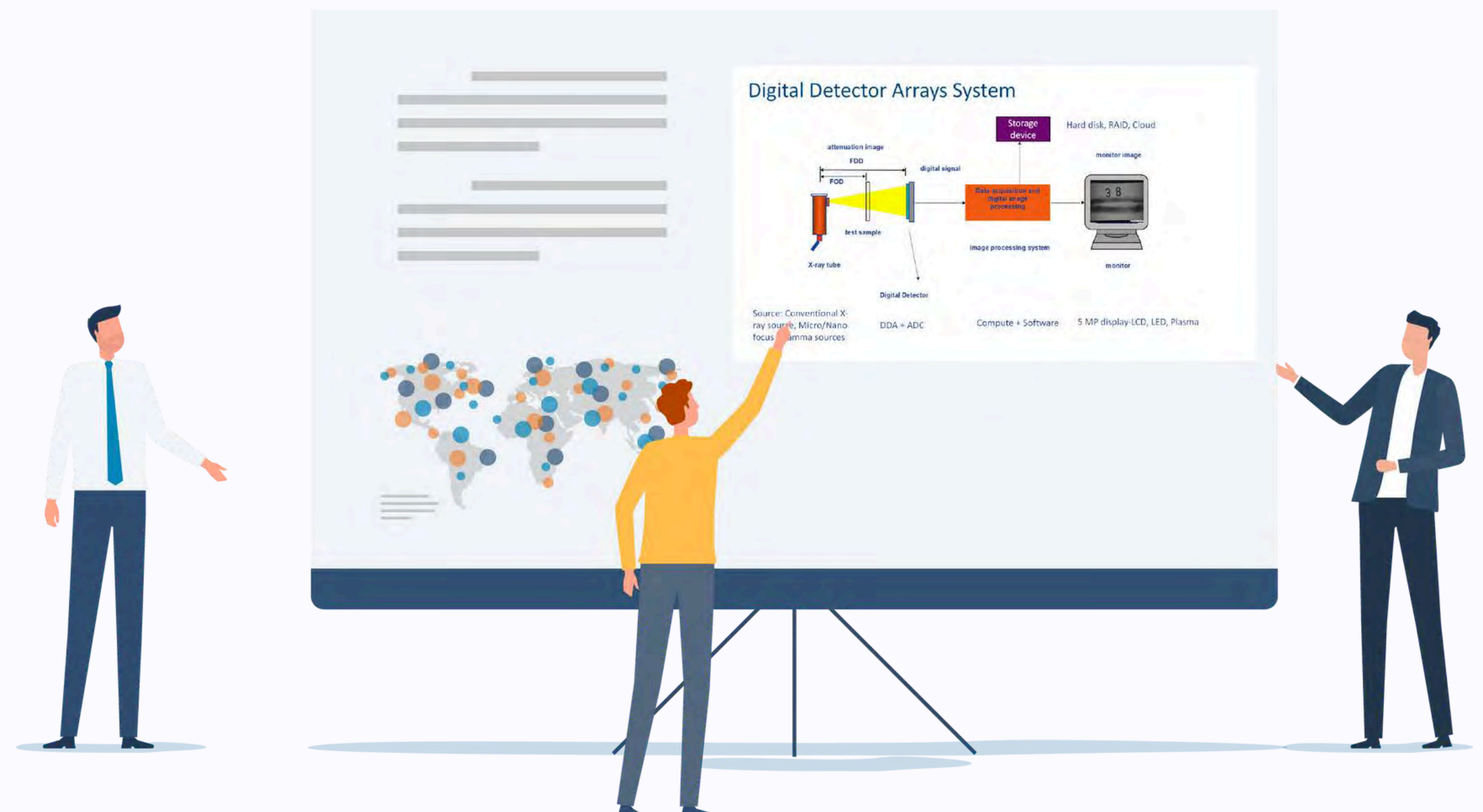
Center for Non-Destructive Evaluation (CNDE)

The Center for Non-Destructive Evaluation (CNDE) was established at the Indian Institute of Technology, Madras (IITM), in April 2001. The CNDE is Asia's leading academic center for Non-Destructive Evaluation (NDE) research and technology translation. The Center focuses on research in Non-Destructive Evaluation, Structural Health Monitoring, and measurements in harsh environments. CNDE has excellent experimental facilities for X-ray, Ultrasound, Infrared (IR) Thermal imaging, Terahertz (THz) imaging, including Micro and Nano Digital Radiography and Computed Tomography system

Digital Radiography Training Outline

This training will cover topics as per ISO TR 25107: 2019 Non-Destructive Testing - Guidelines for NDT training syllabuses and ANSI/ASNT CP-105 Topical Outlines of Non-Destructive Testing Personnel. Some of the topics are:

- Digital Detector Arrays (DDA)
- Computed Radiography
- Image Quality Metrics
- ASTM Standards
- ISO standards
- Applications
- Image Processing
- Evaluation



National Consortium For Non-Destructive Evaluation (NCNDE)

NCNDE was established in November 2024 under CNDE to promote collaborative research in Nondestructive Imaging & Evaluation, Structural Health Monitoring (SHM), and Online process parameter measurements.

The NCNDE aims to tackle the real-world challenges that stakeholders face in non-destructive evaluation (NDE) and structural health monitoring (SHM) through collaborative research and creating top-tier resources for NDE. The Major benefits of NCNDE to the members are the following

- Collaborative research reduces research costs by allowing multiple parties to share their investments.
- Industry-focused research driven by the management board of the consortium.
- Engaging industries in the early stages of research facilitates the testing of technology in real-world environments.
- Reduction in research cycle time due to inputs at various stages of technology development.
- Accessing cross-industry & cross-platform technologies.
- Likelihood of successfully transitioning to a commercial product.
- Enhanced understanding of risks and regulatory requirements at the project's early stage.
- The members of the consortium are open to recruiting top talent from CNDE.

Trainers



Prof. Krishnan Balasubramanian

**Professor In-Charge, GDC;
Professor of Mechanical Engineering,
Head of Centre for Nondestructive
Evaluation (CNDE), IIT Madras**

Prof. Krishnan Balasubramanian has been involved in the field of non-destructive evaluation for more than 25 years with applications and specialisations in the areas of maintenance, quality assurance, manufacturing and design. His areas of interests include intelligent manufacturing and in-process monitoring, structural health monitoring, and applied data analysis. He has over 500 technical publications (including 260 refereed journal papers) and has directed 23 Ph.D. student dissertations and 52 MS student thesis.

He has also served as a consultant to many multi-national companies including GE, Corning Inc., BF Goodrich, Gillette, Caterpillar, Lockheed-Martin, Nippon TV, Karta Technologies, Seiger Spintech, etc. He is currently a consultant to US Air Force, Timken, Boeing, Astrium, Corning, HAL, Indian Navy, ARDE, GE, BHEL, etc. He is also the Principal Investigator in several sponsored research projects funded by DST, DAE, ADA, ISRO and DRDO organizations.

Prof. Balasubramanian is an active member of ISNT, ASNT, SAMPE, ASME, UIA and ASA and has organized several international symposiums and workshops. He currently serves as the Editor-in-Chief of the Journal for Nondestructive Evaluation (ISNT) and as the South-east Asia Editor for the Journal of Nondestructive Testing and Evaluation (Taylor and Francis). He also serves Subject Editor for NDT&E International (Elsevier) and previously served as the Associate Editor of Ultrasonics (Elsevier). He is also on the editorial board of the Journal of Structural Longevity.

He holds an undergraduate degree in M.E from the University of Madras, and a M.S degree from Drexel University, Philadelphia. He completed his Ph.D. from Drexel University, Philadelphia in 1989 and was employed as an Associate Professor with the Department of Aerospace Engineering and Mechanics at Mississippi State University briefly before he started his career in IIT in 2000.

Prof. Krishnan has also instrumental in developing assisted inspection tools using AI for Radiography and PAUT inspection.



Venugopal Manoharan

**CEO of CNDE ,
Indian Institute of Technology -Madras.**

Venugopal Manoharan is currently the CEO of Center for Nondestructive Evaluation (CNDE) , Indian Institute of Technology -Madras. He has been in the field of NDE research, system development and application for more than 35 years. He was working as a Principal Technologist at VisiConsult -X-ray Systems & solutions as a specialist in digital radiography, computed tomography, radiological safety and regulation. Prior to joining VisiConsult, He worked as a Senior Scientist at GE Research for 19 years, scientific officer at the Advanced Fuel Fabrication Facility, Bhabha Atomic Research Centre (BARC) and Division of Post Irradiation Examination and NDT Development, Indira Gandhi Center for atomic research for 13 years.

He received the National NDT award from the Indian Society for Non-Destructive Testing for his contribution in NDE research. ASNT Level-III certification in RT, IR, UT, PT, and ET. His area of interest is Industrial Radiography, digital X-ray imaging, Positron annihilation spectroscopy, Modelling and simulation, quantitative radiography Model-based PoD, Applications of Micro and Nano x-ray computed tomography, Pipeline and pressure vessel integrity, and Training in NDE. He has more than 12 issued patents and 30 technical publications in national and international journals & conferences. He is also Chief Controller of Examinations for the National Certification Board, ISNT since Jan 2022 and Chairman, PFMB for last 2 years. He received Fellowship Award from ISNT in 2023 for his contributions in the field of NDE.

Who can attend:

- NDT experts in Radiography
- NDT Level II and Level III in Radiography
- NDT Tutors who want to extend their expertise in Digital Radiography
- Technicians working in Digital Radiography
- Institutions that plan to establish digital radiography facilities
- Institutions using digital radiography
- Students engaged in research in digital radiography
- AI experts working in digital radiography



AGENDA

DIGITAL RADIOGRAPHY (DDA& CR)- TRAINING @ CNDE-IITM, MDS					
Time	Sep 1, 2025	Sep 2, 2025	Sep 3, 2025	Sep 4, 2025	Sep 5, 2025
09:00 am - 10:00 am	Basic Radiography - Refresher	Computed Radiography-Image Quality Metrics & optimization, Artifacts and reduction methods	Selection of systems: ASTM E 2597 Standard Practice for Manufacturing Characterization of Digital Detector Arrays	Digital Image Processing Tools & Applications-I	Practical DDA: ASTM E2737
10:00 am-11:00 am	Digital Detector Arrays - Physics, Devices, Systems, and Image Acquisition	ASTM E2698--Standard Practice for Radiographic Examination Using Digital Detector Arrays	DDA- Performance Evaluation: ASTM E2737 Standard Practice for Digital Detector Array Performance Evaluation and Long-Term Stability	Digital Image Processing Tools & Applications-II	Practical CR: ASTM E2445
11:00 am-11:15 am	Tea Break	Tea Break	Tea Break	Tea Break	Tea Break
11:15 am-13:15 pm	DDA-Image Quality-Metrics & optimization, Artifacts and reduction methods	ASME Section-V, Article 2 – Mandatory Appendix 9- Radiography using digital detector systems	Computed Radiography Standards ASME Section-V - Article -2 Mandatory Appendix VIII - CR	Application: Corrosion Inspection & Standards	Artificial Intelligence and Assisted Inspection
13:15 pm-14:15 pm	Lunch break	Lunch Break	Lunch Break	Lunch Break	Lunch Break

DIGITAL RADIOGRAPHY (DDA& CR)- TRAINING @ CNDE-IITM, MDS

Time	Sep 1, 2025	Sep 2, 2025	Sep 3, 2025	Sep 4, 2025	Sep 5, 2025
14:15 pm-15:15 pm	Computed Radiography - Physics, Devices, Systems, and Image Acquisition	Application: Welding Inspection ISO 17636-2:2022-Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors An overview of acceptance standards for welds (ISO)	ASTM E2445-Standard Practice for Performance Evaluation and Long-Term Stability of Computed Radiography Systems	Application: Casting Inspection & Standards, Reference Radiographs	Digital Radiography Procedure Writing - Examples
15:15 pm-15:30 pm	Tea break	Tea break	Tea break	Tea Break	Tea Break
15:30 pm-17:30 pm	DDA/CR Data acquisition - Practical Training-I	DDA/CR Data acquisition -Practical Training-II	DDA/CR Data acquisition -Practical Training-III	Training (Practical) – viewing of digital radiographs using Window Level adjustment & filters, Effect and selection of filters on image quality, measurements and annotations	Training (practical) – Image Processing: Profile function, IQIs, basic spatial resolution, and normalized SNR)
17:30 pm	End of session	End of session	End of session	End of session	End of session

Registration Process:

Number of Participants allowed: 20

Registration fee: Rs 40,000 + GST

Contact Person for Registration:

Dhanalakshmi. R

Executive Secretary of CNDE, IITM

cnde.in@gmail.com

Phone: 044 2257 5688 / 9940908831

If you are interested, register here:



Accommodation

Accommodation can be arranged at the IIT Madras Guest House upon request.

Guests are requested to make direct payment to the Guest House at the time of stay.

Connect with us



 website



 LinkedIn