

Certificate Program

Digital Documentation of Built Heritage

(Batch-03)



09 -13 July 2024

On-campus and on-site at Ahmedabad

CPP | CEPT
UNIVERSITY



Above Image Credit: Center for Heritage Conservation (CHC), CRDF in collaboration with M.M.K.B. Trust, Bhuj, Gujarat, India (April, 2023)

Cover Image Credit: CHC, CRDF in collaboration owner of the structure and Avichal Foundation at Dharmaj for the Endangered Wooden Architecture Programme (EWAP), Oxford Brookes University, funded by Arcadia – a charitable fund of Lisbet Rausing and Peter Baldwin, UK (January, 2023)

CEPT PROFESSIONAL PROGRAMS

CEPT Professional Programs (CPP) aims to bridge the gap between academics, practice, policy-making, and implementation through short certificate programs. The mission of CPP is to support individual and organizational learning by creating opportunities to acquire new skills and capabilities, thus allowing professionals to stay relevant in the current knowledge-based global context. It will achieve this by offering professional development, continuing education, and up-skilling opportunities for professionals and in-service persons across disciplines concerned with urban development and the built habitat.

CPP draws from the expertise and capacity of the accomplished faculty at CEPT University, enhanced further by experts and practitioners from the field. Its programs are built on deep research, vast consultancy projects, and innovative pedagogies. CPP offers a repertoire of short programs and topic-focused programs across disciplines of architecture, design, planning, and management with immersive learning approaches combining interactive lectures, case studies, and peer-to-peer exchanges.

ABOUT THE PROGRAM

Digital documentation has emerged as an effective technique to record detailed and accurate information on heritage places within relatively shorter time spans for a deeper understanding of built heritage and its existing condition. This 5-day certificate program aims to develop the skills for digital documentation of historic buildings, structures, and environments through hands-on engagement. It will focus on providing working knowledge of 3D LiDAR scanning and terrestrial photogrammetry, with an introduction to GIS platform.

The program will be conducted at CEPT University. During the hands-on workshop, traditional wooden houses in the historic city of Ahmedabad will be digitally documented. The program will be conducted in collaboration with Center for Heritage Conservation (CHC), CRDF. The program content has been developed and curated by CHC, CRDF in consultation with CEPT Professional Programs (CPP), CEPT University. The curation team from CHC include Mrudula Mane, Prof. Jigna Desai and Jayashree Bardhan.

The workshop is structured as three independent yet interlinked modules: 1. Principles and methods of digital documentation, 2. Field data collection, 3. Integrated approach for post-processing and visualisation. The aim is to gain insights for optimising the time and effort required for the documentation of historic built environments while improving accuracy and quality by integrating different techniques.

PROGRAM STRUCTURE

Module 1: Principles and methods of digital documentation

The workshop will commence with an input session by the subject expert on the ethics of documenting built heritage and proceed with a theoretical introduction to the digital techniques used for documentation. An overview of principles, methods, and key considerations for engaging with a historic built environment will be provided in this module. The introductory session will be followed by a discussion on the prerequisites of the documentation process and the selection of a tool or combination of tools as per the site situation.

Module 2: Field data collection

The second module is dedicated to systematic, hands-on data collection for the built heritage through photography, photogrammetry and 3D LiDAR scanning. It aims to inform participants about selecting appropriate cameras, lenses and settings, understanding light conditions as per the site situations, and capturing information in different formats as per output requirements. The participants will capture photographs to generate photogrammetric output, as demonstrated by the subject experts. Alongside photogrammetry, a demonstration of 3D LiDAR scanning will be given, and participants will collect point cloud data with a laser scanner (of Center for Heritage Conservation). The demonstration will consist of understanding the scanner and its interface, planning the data collection sequence as per site conditions, and optimising quantity and quality during field data collection.

PROGRAM STRUCTURE

Module 3: Integrated approach for post-processing and visualization

The last module will focus on developing a 3D model of the historic structure by integrating 3D LiDAR and Photogrammetric data in corresponding software. It will include methodical data transfer from equipment to processing platforms, data organisation, pre-processing, registration and integration of differential data sets to generate a base model for vectorisation and visualisation for conservation processes. The module will also introduce the participants to GIS platform as a data management tool to store, process, analyse, and present complex spatial data collected from various sources.



PROGRAM FACULTY



Mrudula Mane
Program Director

Mrudula is a conservation architect and PhD fellow at Center for Heritage Conservation (CHC), CEPT Research and Development Foundation (CRDF), CEPT University, Ahmedabad, India. She is pursuing PhD in applying digital documentation techniques in the conservation processes of built heritage at the Faculty of Architecture at CEPT University. Through the Documentation Unit at CHC, Mrudula and the team of architects are developing integrated digital documentation methodologies for the Indian cultural context. The methodologies include but are not limited to terrestrial and aerial photogrammetry, 3D LiDAR Scanning, and GIS Mapping.



Maniyarasan R
Program Faculty

Maniyarasan R, an architect and photographer renowned for his expertise in documenting built heritage, stands at the forefront of architectural preservation. With a comprehensive background in technical imaging, photogrammetry and aerial mapping, he brings a unique perspective to conservation practice. Graduating with a B.Arch from SPA Delhi and PG Photography Design from NID Ahmedabad & UCA Farnham UK, Maniyarasan merges his architectural acumen with a keen eye for visual storytelling. Notably, Maniyarasan led the digital documentation team for 'Sacred Ensembles of Hoysalas' that became the 42nd UNESCO WH site from India. Alongside his professional pursuits, he teaches Design and History at CARE School of Architecture. An alumni of the Leon Levy Foundation Centre for Conservation, he now is a tutor in collaboration with Mehrangarh Museum Trust. He conducts capacity building workshops in heritage documentation & photogrammetry, for institutions such as CEPT, NID, and INTACH chapters.

GUEST SPEAKERS



Jigna Desai
Guest Expert

Prof. Jigna Desai is the Head of CHC, CRDF and Professor at CEPT University. Her current work focuses on formulating frameworks, tools and methods through which theoretical ideas of sustainability and conservation of living historic environments can be translated into practice while addressing the challenges of co-production of space and commodification of heritage. Jigna is the Principal Investigator of the Endangered Wooden Architecture Program (EWAP) grant of CHC, CRDF's project on Wooden Havelis of Gujarat. The project focuses on historical research and digital documentation of traditional wooden houses. Jigna has worked on preparing the nomination dossier that led to the inscription of Ahmedabad as a World Heritage City by UNESCO in 2017 and has extensive experience in architecture and conservation research. She advocates community-based conservation and has partnered with several national and international institutions on heritage conservation initiatives in different parts of India. Jigna is an expert member of the International Scientific Committee for Historic Towns and Villages, International Council for Monuments and Sites (ICOMOS) and an active ICOMOS India chapter member. Jigna has studied architecture, has a master's degree in sustainable architecture from Cardiff University and a PhD in Conservation Studies from CEPT University.



Vagmi Patel
Guest Expert

Vagmi Patel specializes in geospatial analysis, spatial modeling, and remote sensing. Her professional journey includes valuable contributions at CEPT Research and Development Foundation. She holds a Master of Technology degree in Geomatics from CEPT University. Her contributions to geospatial modeling, machine learning, and spatial analysis have earned recognition, including being the first runner-up at the AABTonics International GIS Competition, first runner-up at the India Clean Air Summit and winning the Mapathon organized by IIT Bombay showcasing strong foundation in her field.

PROGRAM CALENDAR

The day-to-day schedule of the program will be shared with participants at the beginning of the program.

Days	Description	Contact hrs	Mode
Day 1 09 th July 2024	Module 1: Principles and methods of digital documentation Input session 1: Ethics of Documenting Built Heritage by Prof. Jigna Desai Input Session 2: Introduction to Architectural Photography and Photogrammetry by Maniyarasan R Input session 3: Introduction to 3D LiDAR Scanning by Mrudula Mane	5	On-campus
Day 2 10 th July 2024	Module 2: Field data collection The participants will be divided into 3 groups. Each group will focus on documenting one traditional wooden structure in Ahmedabad. The following demonstration will be conducted for each group separately. Site orientations and preparatory work by Vidisha Purohit (Teaching Assistant) Demonstration 1: Architectural photography and photogrammetry to each group by Maniyarasan R and Sreeram G R (Teaching Assistant) Demonstration 2: 3D LiDAR Scanning to each group by Mrudula Mane and Revathi Anandan (Teaching Assistant)	5	On-site demonstrations and hands-on sessions
Day 3 11 th July 2024	Module 2: Field data collection Continuation of field data collection by the participants guided by Revathi Anandan, Vidisha Purohit, Sreeram G R and Mrudula Mane	4	On-site

Days	Description	Contact hrs	Mode
Day 4 12th July 2024	<p>Module 3: Integrated approach for post-processing and visualisation by Mrudula Mane supported by Revathi Anandan and Sreeram G R</p> <p>Input session 1: Installation of trail software and orientation. Demonstration of data transfer, standard data organisation, conversation and registration. Introduction to RAW image processing in Lightroom. Introduction to FARO Scene, exploring the interface and understanding the basic workflow from data import to export. (1.5 hrs)</p> <p>Input session 2: Introduction to Agisoft Metashape and Reality Capture for photogrammetric processes. Learning how to combine raw data in Reality Capture software. Data processing, continued exploration and understanding of basic model optimisation techniques. (2 hrs)</p> <p>Input session 3: Introduction to GIS for heritage data management by Vagmi Patel (1.5 hrs)</p>	5	On-campus
Day 5 13th July 2024	<p>Module 3: Integrated approach for post-processing and visualisation by Mrudula Mane supported by Revathi Anandan and Sreeram G R</p> <p>Input session 1: Integrating 3D LiDAR and Photogrammetric data sets to generate 3D models complete with mesh generation and texturisation. (2 hrs)</p> <p>Input Session 2: Vectorisation and visualisation processes for digital outputs with Autodesk ReCAP and InDesign. (2 hrs)</p> <p>Concluding Session: Analysing the output and reflections on digital data collection processes and impact on built heritage conservation. (1 hr)</p>	5	On-campus

Note: Participants are required to bring a digital camera and a laptop with high configuration for the workshop. Guidance for software installation will be provided by the tutors.

Recommended laptop configuration

Up to 32 GB RAM

CPU: 4 - 12 core Intel, AMD or Apple M1/M2 processor, 2.0+ GHz

RAM: 16 - 32 GB

GPU: NVIDIA or AMD GPU with 1024+ unified shaders

ADMISSIONS AND APPLICATIONS

Application Process Online applications have already commenced. To apply to the program visit CPP website <http://cpp.cept.ac.in/> Applicants should complete the online form consisting of 250 words of interest statement for joining the program and must attach their CV/resume.

Application Deadline **31 May 2024**
(The deadline for this program is indicative. All applications will be considered as they are received, and seats will be allotted on a first come first serve basis. Admissions will be closed once all seats are full)

Program Dates **09th – 13th July, 2024**

Program Venue On the CEPT University campus and in the Historic City of Ahmedabad, Gujarat

Who can Apply? This program is open to professionals, researchers and teachers working in heritage conservation, architecture, design, civil and structural engineering or any other field allied to built-environment

Fees **INR 25,000/- + GST** (The fee is inclusive of welcome kit and lunch on all days of the program and exclusive of travel cost and accommodation etc.)

Certificate Participants will receive a certificate from CEPT University on successful completion of the program.



Image Credit: CHC, CRDF (January 2023)




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CEPT University

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