OVERVIEW OF THE COURSE

It has been over 100 years since the advent of photographs as a visual record of events, people and places. Today, with an increasing volume of images being captured across an ever-expanding range of devices and innovative technologies that enable fast and easy dissemination, digital images have become ubiquitous in modern life. In parallel to advances in technology, digital images and video are now relied upon as the primary source for news, entertainment and used as evidence in a court of law ad as a part of medical and financial records. This dependence on digital media, however, has also brought with it a new set of issues and challenges. Today, more than ever, we cannot simply accept photographs at face value. Digital image forensics is a young and emerging field that concerns with obtaining quantitative evidence on the origin and veracity of digital images. It also consists of finding image evidence in a suspect device and organization of this extracted evidence for more efficient search. The goal of the course is to present a comprehensive overview and understanding of different aspects of digital image forensics that would be valuable researchers, forensic experts, law enforcement personnel and legal professionals.

The course is intended as a meeting for discussing various image forensics problems and solutions, to provide a mechanism for exchange of ideas and technologies between academics and industry from a global audience.

OBJECTIVES

i) Exposing participants to the basics of digital image formation by focusing on the hardware and processing elements of digital camera.

ii) Providing holistic view of digital image forensics and more advanced techniques for media editing, analysis and creation software, combined with the increase in computational power of modern computers, image modification and generation easy even for novice users.

iii) Providing practical laboratory exercises to reinforce understanding of basic concepts and to provide interactive illustrations of algorithm capability using samples images.

iv) Enhancing the capability of the participants to understand the core of image authenticity and image verification.

v) Impart research skills to the beginners and quality development of researchers in writing various research reports, thesis, dissertation, research papers, articles, essays in the domain of image forensics.

WHO CAN ATTEND

- Engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
- Students at all levels (B.Tech/M.Sc/M.Tech/Ph.D) or Faculty from reputed academic institutions and technical institutions.

REGISTRATION FEES

- Participants from abroad : US $300
- Industry/ Research Organizations: Rs. 5000/-
- Faculty from Academic Institutions: Rs. 3000/-
- Research Scholars/Students: Rs. 2500/-

HOW TO REGISTER

1. First, 'web register' at GIAN 'Courses Registration Portal': https://goo.gl/AhcCyS. If you're already registered, skip this step.
2. Then, log in, click 'Course Registration' tab on the GIAN Portal, and 'check box' to select this course (Contrast Enhancement in Poor Visibility) from the list. Click 'save' to register, and 'Confirm Course(s)' to confirm.
3. Now, pay the requisite Course Fee online in favour of the Tripura University, **A/C No: 30371209938, IFSC Code: SBIN0010495, MICR Code:799002524**. Keep the copy of payment info (transaction # & date) handy.
4. Fill up the attached registration form and send it along with the payment proof to the course coordinator.

P.S. Registering on the GIAN portal does not guarantee participation in the course. Please do not confuse with web registration with course registration. You might have been 'shortlisted' after paying the 500/-, but your selection is subject to paying the requisite course fee to Tripura University. For successful enrolment, make sure you've made both the payments.

**The local applicants may also submit the registration form along with registration fee in cash to the course coordinator on hand.

A limited number of rooms may be available in Tripura University Guest House on a first-come-first serve basis. Extra charges are needed for room and board.

Number of participants for the course is limited to 35.

Last date for registration is 16th February, 2018.

In case of any queries, you send an email to the course coordinator.

Course Coordinator:
Dr. Mrinal Kanti Bhowmik
Assistant Professor,
Department of Computer Science & Engineering
Tripura University (A Central University)
Mobile: +91-9436129933 (M)
Email: mrinalkantibhowmik@tripurauniv.in

THE FACULTY

Prof. Nasir Memon (B.E. (Chemical Engineering) and M.Sc (Mathematics) Birla Institute of Technology and Science (BITS) Pilani, PhD (Computer Science) University of Nebraska) is a professor in the Department of Computer Science and Engineering at NYU Polytechnic School of Engineering and director of the Information Systems and Internet Security (ISIS) laboratory. He is one of the founding members of the Center for Interdisciplinary Studies in Security and Privacy (CRISSP), a collaborative initiative of multiple schools within NYU including NYU-Steinhardt, NYU-Wagner, NYU-Stern and NYU-Courant. His research interests include digital forensics, biometrics, data compression, network security and security and human behavior. Prof. Memon has published over 250 articles in journals and conference proceedings. He has been on the editorial boards of several journals and was the Editor-In-Chief of Transactions on Information Security and Forensics.

Mrinal Kanti Bhowmik (B.E. (CSE) Tripura Engineering College, Govt. of Tripura 2004, M.Tech (CSE) Tripura University (A Central University) 2007, Ph.D. (Engineering), Jadavpur University 2014) is an Assistant Professor at Tripura University (A central University). His research interests are related to the field of biometric, Computer Vision, Artificial Neural Network, Information Security and Medical Image Processing, etc.

GIAN Course ON Image and Video Forensics
(12th-16th March, 2018)

Organized By

Department of Computer Science & Engineering
**Tripura University
(A Central University)
Suryamaninagar-799022, Tripura, India**

Venue
**Tripura University
(A Central University)
Suryamaninagar-799022, Tripura, India**

COURSE DETAILS

12th March, 2018 (Monday)

A. The Imaging Pipeline
- Imaging Pipeline: From acquisition to the saved file
- Image compression techniques

B. Image Formats and Metadata
- Image meta data and what can be deduced from it.
- Challenges induced by social media

C. Problem solving session with examples (Tutorial)

13th March, 2018 (Tuesday)

D. Image Carving
- Intro to carving
- Reconstructing image from fragmented files
- Recovering image fragments

E. Identifying camera model
- Model specific artifacts
- CFA (Bayer patterns)
- Lens distortion (compact cams, smart phones)

F. Demonstration of Visual and Infrared (IR) Image Acquisition and problem solving analysis using FLIR Research IR tool (Tutorial)

14th March, 2018 (Wednesday)

G. Camera fingerprints (Part I):
- Device specific artifacts
- Sensor noise: some are easy to correct – dark current, some are complex –PRNU (Photo Response Non Uniformity)

H. Camera fingerprints (Part II):
- Camera verification and identification
- Composite fingerprints, short digest

I. Problem solving session with examples (Tutorial)

15h March, 2018 (Thursday)

J. Tamper detection (Part I):
- Pixel based artifacts, resampling, double JPEG, PRNU based detection, splicing, copy paste.

K. Tamper detection (Part II):
- Semantic and Physical Level

L. Review questions covering all material (Tutorial) and Examination (Multiple Choice Questions)

16th March, 2018 (Friday)

M. Video forensics for stabilized and non stabilized video (PRNU)

N. Counter forensics

O. Problem solving session with examples and discussion on writing various research reports (i.e. thesis, dissertation, research papers, articles, etc.)

ABOUT TRIPURA UNIVERSITY

The state of Tripura is geographically isolated from the rest of India. Due to lack of infrastructure earlier it was difficult for the students of Tripura to pursue higher studies various fields within the state. The State Government took the initiative to pass the Tripura University Act in the Assembly in 1987 and the first University in the state came into being on 2nd October 1987. The objective of the University is not only be "to disseminate and advance knowledge by providing instructional and research facilities" in the state in areas of contemporary relevance to the society and the country but to make special provisions for studies in tribal life and culture and to introduce vocational subjects with a view to provide employment opportunities to the students. A total number of 42 courses run under the University, which includes Certificate Courses, Under Graduate, Post Graduate Diploma and Post Graduate Studies. In addition to these, Ph.D programmes are also offered in 33 subjects. The number of affiliated Colleges at present is 46 among which there are 23 General Degree Colleges, 17 Professional Colleges, 4 Paramedical and Nursing Colleges and 2 Medical Colleges.

ABOUT THE CITY

Agartala, the capital city of Tripura is located in the north eastern region of the country. It covers 10,491 km2 and is bordered by Bangladesh to the north, south, and west, and the Indian states of Assam and Mizoram to the east. Tripura has a picturesque surrounding covered with hills and dales, sprawling green valleys and hilly brooks. The popular Tripura attractions are Kamalasagar Lake, Dumboor Lake, Ujjayanta Palace, Neermahal, Kunjaban Palace, Tripura Government Museum, Jampui Hill, Dumboor Lake etc. The famous Tripureswari Kali Temple is situated in Udaipur city and is about 60 km away from the capital city. The weather condition of Agartala city is moderate with temperature between 21oC to 36oC during summer season and between 8oC to 25oC in winter. Tripura is adorned with a large number of attractive tourist sites. The northeastern state of Tripura is famous all over the world for its rich cultural heritage, beautiful palaces, wildlife sanctuaries, temples, museums. The city has a number of interesting tourist attractions to visit and enjoy.

Registration Form For
GIAN Course On
Image and Video Forensics

1. Full Name with Designation:

_____

_____

2. Department and Organization:

_____

_____

3. Experience (in years):

Teaching: _____ Industry: _____

4. Address for Correspondence:

_____

_____

Pin Code: _____
Phone:_____
Mobile No.:_____
E.mail:_____

5. Registration Category (Please Tick):
Faculty Member/Research Scholar/
Student/Participants from Industry/Research Organisation.

6. Accommodation: Yes / No

If yes then fill up the following details
Date of arrival:_____Time:_____

Date of departure:_____Time:_____

Room will be provided in shared basis only. Accommodation charge will be accepted by the guest house authority.

7. Details of payment of course:
- Transaction No.: _____
- Date: _____
- Bank: _____
- Amount Rs: _____

8. Are you registered under 'web register' at GIAN 'Courses Registration Portal': Yes / No

9. Have you attached:
a. Pdf of web registration proof: Yes/ No

b. Online payment proof of GIAN Course registration(not the payment of web registration): Yes/ No

c. Institution Identity proof: Yes/ No

Signature of Participant with date

Forwarding Authority:

(Seal and Signature of the principal of Institute/Head of the Department)