

## Course Relevance

The domain of Video Analytics from the Security point of view is increasingly gaining importance since surveillance cameras can now record large duration of videos. However, analysing these large duration videos is practically becoming impossible manually thereby necessitating the need for pattern recognition and vision techniques to be applied to video data. Additionally, with newer depth cameras like Kinect sensor being available at a low cost also has motivated researchers to exploit such depth cameras for real time applications of surveillance. This and many more has led to the genesis of video analytics from the security point of view which this course is designed to handle.

The focus of this course will be on introducing all the available cameras like RGB, RGB-Depth (Kinect) along with their SDKs to capture real time test video sequences. Additionally, existing state-of-art methods will be demonstrated with MATLAB source code so that researchers working in the broad domain of video analytics are benefitted. Finally, research paper writing also which is an important aspect of doing research will be covered.

## Course Objectives

- To present a comprehensive overview and understanding of video analytics from the security perspective and the current on-going research directions and activities.
- To demonstrate RGB camera and Kinect camera (RGB-D) to record and analyse video sequences from surveillance point of view.
- To introduce the standard datasets available as well as record real time datasets for starting the basic research like Gait recognition, Person re-identification, Object Tracking etc. in video security.
- To provide practical hands on lab exercises using MATLAB for illustrating the interesting field of video security.
- To provide useful tips for research paper writing.

## Speakers

Dr. Manish Okade, NIT Rourkela

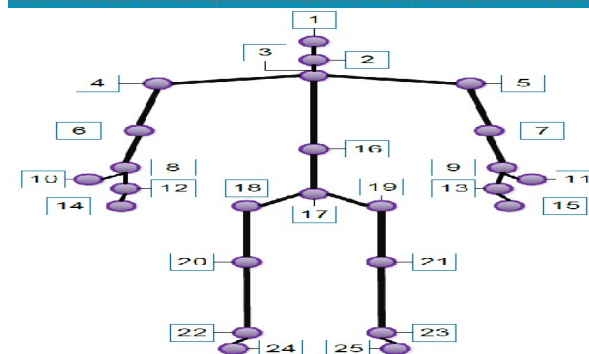
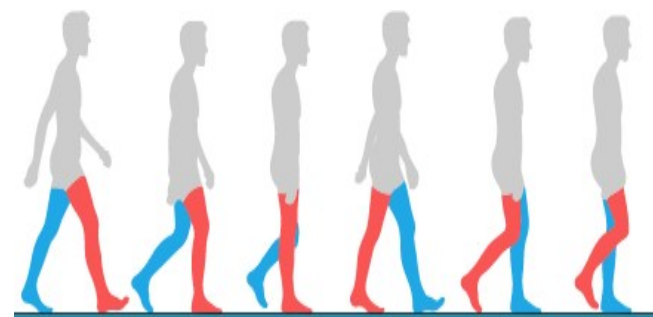
Dr. Ashok Turuk, NIT Rourkela

Dr. Anup Nandy, NIT Rourkela

This course is partially sponsored by Information Security Education and Awareness (ISEA) project of MeitY, Govt. Of India.

## MeitY sponsored Short Term Course on "Video Analytics: A Security Perspective"

5<sup>th</sup> July-9<sup>th</sup> July 2019



**Co-ordinator:**

**Dr . MANISH OKADE**

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## ABOUT NIT ROURKELA:

National Institute of Technology (NIT), Rourkela was founded as Regional Engineering College, Rourkela in 1961. It is a prestigious Institute with a reputation for excellence at both undergraduate and postgraduate levels, fostering the spirit of national integration among the students, a close interaction with industry and a strong emphasis on research, both basic and applied. Its been consistently ranked within TOP 20 engineering institutes for 4 consecutive years as per MHRD's NIRF, Govt. of India.

The city of Rourkela is a bustling industrial town, cosmopolitan by nature and is well connected to all parts of the country by road and rail. It is en-route Howrah-Mumbai main line of South-Eastern Railway. Nesting amidst greenery on all sides, NIT campus is approximately 7km from Rourkela railway station. The nearest airports are Jharsguda, Ranchi, Kolkata and Bhubaneswar.



Website: [www.nitrkl.ac.in](http://www.nitrkl.ac.in)

<https://sites.google.com/site/manishokade/>

### HOW TO APPLY

Category	Registration fee:
Faculty	Rs. 1500/-
Industry participants	Rs. 2000/-
Students (UG/PG/Ph.D.)	Rs. 500/-

Interested participants can pay the registration fee via online banking followed by sending an email to the co-ordinator. The banking details are given below. Alternatively, they could also pay via Demand Draft drawn in favour of Director, NIT Rourkela and send it by post to the coordinator.

Account Name: Director NIT Rourkela

Account number: 10138951648

IFSC Code : SBIN0002109

Bank name : SBI, NIT Campus.

Registration includes Accommodation, Course kit, study material, breakfast and lunch on all five days. Accommodation will be provided in student hostels.

#### 5<sup>th</sup> July 2019:

- Introduction to Video Analytics: Motivation, Objectives and Current state of art.
- Optical Flow: Phase Correlation Algorithm, Lucas Kanade Optical Flow algorithm, Horn Schunck Optical Flow algorithm.
- Tutorial (hands-on) with video datasets.

#### 6<sup>th</sup> July 2019 :

- Motion Estimation: Full Search, Fast Search algorithms namely Three Step Search (TSS), New TSS, Diamond Search, Logarithmic Search.
- Pixel Domain Video Analytics showing utilization of Optical Flow.
- Invited Talk + MATLAB Tutorial

#### 7<sup>th</sup> July 2019 :

- Overview of Microsoft Kinect Camera and its usefulness in Human Gait Recognition from Videos with its applications to Surveillance, Person re-identification from videos: Problems, motivations and challenges.

#### 8<sup>th</sup> July 2019 :

- Compressed Domain Video Analysis: Camera Motion Estimation, Classification and its Applications to Video Stabilization.
- MATLAB Tutorial LAB Session

#### 9<sup>th</sup> July 2019 :

- Research areas in Video Analytics
- Art of research paper writing
- Valedictory & certificate distribution