

Four Week Summer Internship

On

“Image Processing with Python and Machine Learning”

June 15- July 11, 2020

Registration Form

Please complete the details below

Name(Mr./Ms.): _____

Designation: _____

Department: _____

Organization: _____

Highest Qualification: _____

Specialization: _____

Address: _____

Tel. No. (Mob): _____

E-mail ID: _____

Aadhar Number: _____

Payment Details: (a) Transaction ID: _____

(b) Mode: _____ (c) Date: _____

Accommodation Required (Yes/No): _____

Declaration:

The information provided above is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the summer training and shall attend the summer training for the entire duration.

Date:

Signature of the Candidate

Signature of Head of Department/Institute

Note:

Sponsored by TEQIP-III.

Total fee: Rs. 4000/- which includes Registration Fee: 2500/- and Study Material + Kit Charges: 1500/-

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Mr. Parwat Singh Yadav

Chairman B.O.G REC Ambedkar Nagar

Patron

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Vice Chancellor, AKTU Lucknow

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Mr. Hemant Kumar Baranwal

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Mr. Sharad Verma

Mr. Prince Rajpoot

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Ms. Kumkum Dubey

Mr. Shashank Shekhar Tiwari

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Dr. Sudhakar Tripathi

Head, IT Deptt.

Four Week Summer Internship
On

“Image Processing with Python and Machine Learning”
(IPPML-2020)

15/06/2020 to 11/07/2020

Organized by



Department of Information Technology
Rajkiya Engineering College Ambedkar Nagar

(AICTE Approved Government Engineering College,
Dr.APJAKTU Code 737)

Contact details

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About the summer training: A four Week Internship Program on “Image Processing using Python and Machine Learning” is being conducted at REC Ambedkar Nagar. The whole course is handled by industry experts and academicians. The major Course Contents includes theory, Practical demonstration and Case Studies on the following topics: Fundamental of Python Language with advanced level covering their packages and Image Processing with Machine learning.

About the Institute: Rajkiya Engineering College (R.E.C.) Ambedkar Nagar was established by Government of Uttar Pradesh. The college is offering B.Tech Programme in three disciplines – Information Technology (IT), Electrical Engineering (EE) and Civil Engineering (CE) with intake of 60 seats in each branches. The students are extensively exposed to cross-cultural environment as candidates from other states such as Jammu & Kashmir, Madhya Pradesh, Rajasthan etc. also join this college. REC Ambedkar Nagar is fully residential institution with three hostels for boys and one for girls presently.



About the Departments:

The Department of Information Technology was established in 2010 with an intake of 60 students. The department has highly qualified, committed and well experienced faculty members with varied specializations. The faculties are involved in organizing and participating in several seminars, conferences and workshops in addition to their academic responsibilities. They have also published research papers in various national and international journals, presented papers in conferences in India. Over the years, the department has become a center of excellence, providing in-depth technical knowledge and opportunities for innovation and research, with well-equipped computer facilities, virtual class room and R & D labs.

Information Technology Department is the first point of contact for the campus community by supporting telephone, computing, networking, and applications. IT Department is dedicated to facilitate and enhance teaching, learning, and administrative services and to increase the productivity and efficiency using information technology resources.

Target audience:

- Research Scholars
- UG & PG students
- Staffs/supporting staffs

Note: Participants are advised to bring laptops for hands-on practice during the sessions.

Registration Fee: All the participants are required to submit following amount:

- On or Before 31/05/19- rupees 4000
- After 31/05/19- rupees 5000

This non-refundable registration fees need to be submitted to the college account: Account No. **6257000100005758** (IFSC code: **PUNB0625700**), Bank: PNB.

Please note that only those participants **who have successfully completed the internship with 80% attendance will get their certificate.**

Registration Process: For registration the participants are required email the scanned copy of duly filled application form and registration fee receipt at: ippml.recabn@gmail.com on or before 31st May 2020.

Travelling Allowance and Accommodation: No TA, DA will be provided for the participant to attend the training program. However, the limited numbers of accommodations at hostels are available for the participants based on first come first serve basis.

Important Date:

Date of Event	11th June to 15th July, 2020
Registration Open	25th April, 2020
Registration Closed	31st May, 2020

Resource Persons: The resource persons for this internship will be scientist, industry person and expert faculty members with strong research background from the renowned place such as IBM, DRDO, BARC, IITs, IIITs, and NITs.

transforms – DFT, DCT.

Module 4 IMAGE ENHANCEMENT

Spatial Domain: Gray level transformations – Histogram processing – Basics of Spatial Filtering –

Smoothing and Sharpening Spatial Filtering, Frequency Domain: Introduction to Fourier

Transform – Smoothing and Sharpening frequency domain filters – Ideal, Butterworth and Gaussian, Color Image enhancement.

Module 5 IMAGE RESTORATION

Image Restoration – degradation model, Properties, Noise models – Mean Filters – Order Statistics

– Adaptive filters – Band reject Filters – Band pass Filters – Notch Filters – Optimum Notch

Filtering – Inverse Filtering – Wiener filtering.

Module 6 IMAGE SEGMENTATION:

Edge detection, Edge linking via Hough transform – Thresholding – Region based segmentation –

Region growing – Region splitting and merging – Morphological processing- erosion and dilation,

Segmentation by morphological watersheds – basic concepts – Dam construction – Watershed segmentation algorithm.

Module 7 IMAGE COMPRESSION AND RECOGNITION

Need for data compression, Huffman, Run Length Encoding, Shift codes, Arithmetic coding, JPEG

standard, MPEG. Boundary representation, Boundary description, Fourier Descriptor, Regional

Descriptors – Topological feature, Texture – Patterns and Pattern classes – Recognition based on matching.

Module 1 Core Python

Python Introduction,
Modes of Operation,
Variables, Strings handling,
Operators and Operands in python,
Python Lists,
Python Dictionary,
Python Functions
and Lambda
Function,
Python Modules and Packages,
Class and Objects,
Multi-Threading,
File Handling,
Exception Handling,
Python Regular Expressions etc.

Module 2 Advance Python

Database Connection,
GUI Programming,
Machine Learning using Python, etc.

Module 3 DIGITAL IMAGE FUNDAMENTALS

Steps in Digital Image
Processing –
Components –
Elements of Visual
Perception – Image
Sensing and
Acquisition – Image
Sampling and
Quantization –
Relationships between
pixels – Color image
fundamentals – RGB,
HSI models,
Two-dimensional
mathematical
preliminaries, 2D

