



This short-term course is meticulously designed to provide participants with a comprehensive understanding of recent advances in computer vision, with a focus on both theory and real-world applications. Topics covered include cutting-edge image processing techniques and deep learning models, addressing challenges such as object recognition, human activity analysis, and underwater object detection—critical in areas like marine exploration and surveillance.

Participants will also gain hands-on experience developing computer vision applications, providing them with practical skills to tackle real-world projects. The course is ideal for students, researchers, and professionals looking to advance their expertise in this rapidly evolving field.

Additionally, the course offers an academic exploration of the strengths of computer vision in fields such as autonomous systems, augmented reality, and underwater detection. By the end of the course, participants will be equipped with the technical knowledge to contribute to the transformative potential of modern computer vision systems.

Course Coverage:

- A Comprehensive Overview of the Mathematical Foundations from Neural Networks to Convolutional Neural Networks
- Exploring Convolutional Neural Network (CNN) Models in Computer Vision
- Zero-Shot Learning Techniques for Advanced Computer Vision Applications
- Investigating the Robustness and Generalization Capabilities of Computer Vision Technologies
- Applications of computer vision in Assistive technology
- Automated Real-Time Surveillance for Security Applications
- Advancements in Augmented Reality for Enhancing Physical Environments
- Gesture Recognition and Facial Analysis in Human-Computer Interaction
- Environmental Monitoring Using Computer Vision for Wildlife and Nature Conservation

Lab Sessions:

- Self-Driving Cars: Use Keras and Python to implement computer vision techniques that help vehicles recognize objects, lanes, and pedestrians.
- Healthcare: Apply Keras and Python to develop AI models for detecting diseases in medical images like X-rays and MRIs.
- Agriculture: Leverage Keras and PyTorch to build vision systems that monitor crops and detect pests.
- Marine Exploration: Use Keras and PyTorch to detect objects in underwater footage.

Key Speakers:

- Prof. Tandra Pal, NIT Durgapur
- Dr. Prantik Chatterjee, MathWorks
- Prof. Sujit Das, NIT Warangal
- Dr. Debabrata Samanta, CIT Program Head, RIT Kosovo
- Dr. Ratnakar Dash, NIT Rourkela
- Dr. Anup Nandy, NIT Rourkela
- Dr. Dhanonjoy Bhakta, IIIT Ranchi
- Dr. Puneet Kumar Jain, NIT Rourkela
- Dr. Arnab Ghosh, NIT Rourkela
- Dr. Kaustuv Nag, IIIT Guwahati
- Dr. Prasenjit Dey, NIT Rourkela, Ex-Intel
- Dr. Panthadeep Bhattacharjee, NIT Rourkela



**National Institute of Technology
Rourkela**

**Short Term Course and Faculty
Development Programme
(Online Mode)**

On

**Recent Advances in Computer
Vision: Applications and
Implementation (RACVAI-2024)**

06th - 10th December 2024

Coordinator

Dr. Prasenjit Dey

Chairman

Prof. Bidhudutta Sahoo

Organized By

**Dept. of Computer Science and
Engineering**

**National Institute of Technology
Rourkela,**



Introduction:

In contemporary technology landscapes, computer vision has emerged as a pivotal discipline, enabling machines to comprehend and interpret visual data, effectively bridging the gap between human perception and artificial intelligence. Its manifold advantages are prominently demonstrated in domains such as autonomous driving, healthcare diagnostics, retail optimization, and security enhancements, where it bolsters decision-making, automates tasks, and fortifies safety measures. However, persistent challenges include the demand for robustness across varying environmental conditions, the complexities entailed in managing object occlusion, and the ethical considerations surrounding privacy preservation and algorithmic bias mitigation. Nonetheless, the undeniable merits of computer vision hold the promise of revolutionizing industries, optimizing operational efficiencies, and ushering in innovative applications such as augmented reality, human-computer interaction, and smart urban development. As scholars and technologists grapple with these intricacies, the trajectory of computer vision unfolds with limitless potential for innovation and societal progress.

Online Account Details:

Account No: 10138951784

Account Name: CONTINUING EDUCATION
NIT ROURKELA

IFSC No: SBIN0002109

Branch: State Bank of India, NIT Campus
Rourkela

About the Institute:

National Institute of Technology (NIT), Rourkela is one of the premier national level institutions in our country under MoE, Govt. of India, and is responsible for providing technical education. For knowing further details, please visit <https://www.nitrkl.ac.in/>

34 NIRF Overall	19 NIRF Engg.	30 NIRF Research	291 QS Asia
-----------------------	---------------------	------------------------	----------------

About the Department:

The department of CSE was established with the vision to prepare its students for professional employment and graduate education through study and implementation of the fundamental principles of theory, abstraction, and software design, while at the same time presenting the ethical and social issues associated with computer science.

The department offers various UG courses with a mission to provide high-quality education that prepares the graduates for success in their professional practice and advanced studies. The department also offers M. Tech in Computer Science, Information Security, and Software Engineering; and Ph. D. for regular as well as sponsored candidates.

Please visit <https://website.nitrkl.ac.in/CS/>

Online Registration Form:

<https://forms.gle/hFCotndSAEkQBJZW7>

Registration Details:

Category	Online Registration Fee in INR
Research Scholars/ PG / UG Student	600/-
Faculty from Engineering Institutes	700/-
Engineers from Industry and R&D Organizations	900/-
No registration fee for students / staffs of NIT Rourkela	

Important Dates:

Registration Deadline: 5th December 2024

Short-term Course Date: 06th-10th December 2024

Contact us:

Dr. Prasenjit Dey

Assistant Professor

Ph: 9123363688 (M), 0661-246-2375(O)

Email: deyp@nitrkl.ac.in

**Dept. of Computer Science and Engineering,
National Institute of Technology Rourkela
– 769008, Odisha.**