Lecture Series under SPARC

COMPUTING TECHNIQUES FOR URBAN MOBILITY AND SMART PARKING

28-30 January 2021

SUMMARY

This series will introduce students to concepts of smart parking focusing mainly on parking occupancy detection using sensors. The lectures will introduce principles of computer-vision for mobility applications focusing on images and LiDAR dataset. The lectures will provide theoretical basis for image-based parking occupancy detection followed by tutorials on deep-learning techniques for parking occupancy detection.

SPEAKERS:

Prof. Kourosh Khoshelham
University of Melbourne

Dr. Debaditya Acharya
University of Melbourne

Register at:
https://forms.gle/ipCzPvTxExyL2rjj8

Register before January 26, 2021

Contact: ncgiitk.school@gmail.com
Lecture Series under SPARC

Lecture 1:
Sensors for parking occupancy detection
Prof. Kourosh Khoshelham  
28 January 2021 [9:00-10:30 A.M. (IST)]
- The concept of smart parking.
- Review of sensor technologies for parking occupancy detection.
- A comparison of existing sensors in terms of accuracy, reliability, and cost.
- Open challenges in parking occupancy detection.

Lecture 2:
Computer-vision techniques for mobility applications
Prof. Kourosh Khoshelham  
29 January 2021 [9:00-10:30 A.M. (IST)]
- Review of computer vision techniques in urban mobility and transport systems.
- Focus on imagery and LiDAR point clouds as the main data modalities.
- Computer vision tasks, including classification, segmentation, object detection, and tracking.
- Applications of various techniques to data captured by sensors.

Lecture 3:
Image-based parking occupancy detection
Dr. Debaditya Acharya  
30 January 2021 [9:00-11:00 A.M. (IST)]
- A parking occupancy detection using a deep-learning classification network applied to CCTV images.
- Theoretical basis for image-based parking occupancy detection

Tutorials:
Dr. Debaditya Acharya  
30 January 2021 [9:00-11:00 A.M. (IST)]
- Two MATLAB tutorials help to implement the methodology.
- Fine-tuning a pre-trained deep neural network to determine the occupancy of the parking spaces.
- Spatio-temporal analysis of the detections made for automatic parking slot delineation.

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