INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITDM) KANCHEEPURAM

INTRODUCTION OF NEW COURSE

<table>
<tr><td>Course Title</td><td colspan="2">Multimedia Processing and Analysis</td><td>Course No</td><td colspan="5">EC5XXX</td></tr>
<tr><td rowspan="2">Department/ Specialization</td><td colspan="2" rowspan="2">Electronics & Communication Engineering</td><td rowspan="2">Credits</td><td>L</td><td>T</td><td>P</td><td>C</td></tr>
<tr><td>3</td><td>1</td><td>0</td><td>4</td></tr>
<tr><td>Faculty proposing the course</td><td colspan="2">Dr. Appina Balasubramanyam</td><td>Status</td><td colspan="4">Core □ Elective ■</td></tr>
<tr><td>Offered for</td><td colspan="2">UG/PG</td><td>Type</td><td colspan="4">New ■ Revision □</td></tr>
<tr><td colspan="3">Recommendation from the DAC: Yes</td><td>Date of DAC</td><td colspan="4">12. 11. 2021</td></tr>
<tr><td>External Experts</td><td colspan="6">Prof. Sumohana S Channappayya, Dept. of EE, IIT Hyderabad
Prof. Kaushik Mitra, Dept. of EE, IIT Madras</td></tr>
<tr><td>Prerequisite</td><td colspan="2">Signal processing, Probability</td><td>Submitted for approval</td><td colspan="4">46th Senate</td></tr>
<tr><td>Learning Objectives</td><td colspan="6">This course is intended to be a graduate-level course. This course introduces different types of multimedia analysis methods and can help to deal with real-world image and video processing problems like computer vision applications, statistical analysis, quality assessment, visualization of graphics, etc.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="6">At the end of the course, the learners are expected to do the following:
▪ To describe the different types of multimedia components.
▪ To apply processing methods in various real-time problems.
▪ To implement various learning methods in multimedia components.</td></tr>
<tr><td>Course Contents (with approximate breakup of hours for lecture/ tutorial/practice)</td><td colspan="6">Fundamentals of image processing- Introduction to image processing, Binary and Gray scale image- operations. Spatial and spectral analysis. Geometric operations. (10L+3T)

Fundamentals of video processing- Spatial and temporal sampling, optical flow estimation, motion estimation. (8L+3T)

Basic Image and video compression methods- JPEG, JP2K, Video codec and H.264 compressions. (6L+2T)

Multimedia processing and applications- Quality enhancement, Quality evaluation- Subjective and Objective assessment, Super resolution, Stereo based Depth extraction, Object detection. (12L+4T)

Feature Extraction methods- Statistical analysis and modeling, Introduction to learning methods. (6L+2T)</td></tr>
<tr><td>Essential Reading</td><td colspan="6">Digital Image Processing by R.C. Gonzalez and R.E. Woods, Pearson Education, 3rd Edition, Pearson Education, 2009.</td></tr>
<tr><td>Supplementary Reading</td><td colspan="6">Bovik A C, Handbook on Image and Video Processing, 2nd Edition, Academic press, 2005.</td></tr>
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