

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	图像视频压缩与网络通信 Image/Video Compression and Network Communication
2.	课程性质 Compulsory/Elective	选修课/Elective
3.	课程学分/学时 Course Credit/Hours	3
4.	授课语言 Teaching Language	English
5.	授课教师 Instructor(s)	何志海 HE Zhihai
6.	是否面向本科生开放 Open to undergraduates or not	否
7.	先修要求 Pre-requisites	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)
8.	教学目标 Course Objectives	<p>让学生深入了解图像视频压缩与网络通信的信息论基础理论、原理方法、系统设计、与国际标准, 为今后研究、工作、与实践打下良好的基础。</p> <p>Let the students gain in-depth understanding of the fundamental information theories, principles and methods, system design, and international standards of Image/Video Compression and Network Communication.</p>
9.	教学方法 Teaching Methods	<p>课程采样黑板书写和 PPT 讲解, 并要求学生完成课程项目, 根据所学知识, 设计自己的图像视频压缩和网络通信系统。</p> <p>The course teaching will be based on blackboard writing and PPT presentation. The students are required to complete a large final course project, building an image/video compression and network communication system based what they have learned from this course.</p>
10.	教学内容 Course Contents	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)
	Section 1	图像压缩的信息论基础
	Section 2	信源编码理论
	Section 3	量化方法 Quantization
	Section 4	图像变换压缩理论与方法 Transform coding

	Section 5	DCT、小波变换 DCT, wavelet transform
	Section 6	小波变换图像压缩 DWT-based image compression
	Section 7	JPEG、JPEG2000 压缩标准 JPEG International Standards
	Section 8	运动估计 Motion estimation
	Section 9	视频压缩原理 Video coding
	Section 10	视频压缩系统设计 Video coding system design
	Section 11	视频压缩标准 Video coding standard
	Section 12	视频网络通信 Video communication over networks
	Section 13	图像视频压缩的最新进展 Recent advances in image/video compression
11.	课程考核 Course Assessment	
	考勤 (Attendance) 5%; 作业 (homeworks) 25%; 小测验 (quizzes) 10%; 期中考试 (middle term exam) 30%; 期末课程项目 (final course project) 30%	
12.	教材及其它参考资料 Textbook and Supplementary Readings	
	将使用编写的课程讲义和论文。 Will use lecture notes and papers.	