

# 广播与电视技术



## Radio & TV Broadcast Engineering

全国百种重点期刊 专业核心科技期刊

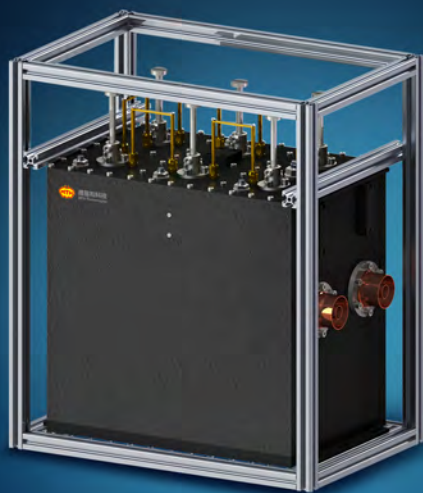
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《广播与电视技术》是由国家广播电视总局主管，国家广播电视总局广播电视规划院主办，《广播与电视技术》编辑部编辑出版的国家级技术期刊，是发布广播电视科技政策，反映事业建设成就，介绍高新技术，交流工作经验，传播各种信息的重要媒体。本刊主要面向各级广播电视行业主管部门、各级广播电台、电视台、网络公司、发射台、微波站、卫星站、节目制作单位及电教系统，同时对企业、工矿、学校、部队等具有公共广播电视设施的管理人员、技术人员也有参考价值。

为繁荣学术交流，本刊已加入《中国学术期刊网络出版总库》、“万方数据”和“维普中文科技期刊数据库”，有权选取部分论文在本刊关联平台（如广电猎酷网 www.lieku.cn、“广电猎酷”微信公众号等）发布，作者著作权使用费已随论文稿酬一次性给付。本刊充分尊重作者的原创成果并合理保护作者享有的权利，如作者不同意本刊之外其他形式的发布，请在来稿中声明，本刊将作适当处理。本刊及主办单位对本刊已发布作品的内容和观点不持有任何立场、不做出任何承诺或保证、不承担任何责任。

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## [12] 5G NR高塔高功率广播系统研发与外场测试

中国传媒大学在国内率先实现了具有完全自主知识产权的支持高塔高功率的700MHz 5G NR广播系统,可满足未来低频段(400MHz~1.2GHz) 5G高塔高功率广播与基站组播/单播业务融合需求。本文介绍了该系统的功能模块及外场测试情况,测试结果显示该系统在信号良好覆盖范围内画质稳定不卡顿,语音质量清晰,可为开展700MHz 5G NR试验组网与示范应用提供数据支持。

## [27] 基于深度学习的AVS3视频编码技术研究

科技的革新带来数字电视和多媒体行业的高速发展,超高清视频、VR视频、3D视频以及智能化监控视频等新兴视频格式的应用正日益丰富着人们的视觉体验。随着这些更高分辨率、更高帧率视频的广泛应用,视频数据量增长快速,对数据存储和网络传输带来更大挑战。因此,需要研究编码效率更高的视频编码技术,以缓解海量数据存储、传输及应用的压力,为数字多媒体产业持续健康质量发展提供有效保障。本文对基于深度学习的AVS3视频编码技术进行了较为深入的研究,相关研究成果及性能测试数据可咨参考。

## [62] 基于微信公众平台的广电多屏融合系统设计及实现

随着数字电视、有线电视,以及三网融合的快速的发展,可供用户选择的直播、点播节目呈爆发式增长,但传统的红外遥控器,复杂的界面操作逻辑,大大降低了用户快速查找并观看电视节目的用户体验。而伴随着移动智能终端的迅猛发展,微信客户端的全面普及,微信公众平台的开放能力为电视用户的操作体验、分享体验、购物体验提供了全新的解决方式。本文所述的“微信电视多屏融合系统”,通过结合微信公众平台开放的能力,以公众账号或微信小程序为载体,将电视和手机微信进行绑定,实现了手机与电视的多屏交互体验,相关做法可供同行借鉴。

## [87] DTMB与5G地面广播对比研究

5G地面广播是广播电视走向移动化、交互化的一个重要的可选路径。本文通过理论推导、链路级仿真计算对比分析了不同信道条件下DTMB和5G地面广播的误码率、BICM传输效率、系统传输效率等指标,为广播电视无线传输技术的迭代分析提供指标参考。

## [117] 基于数字水印和视频基因技术的电视广告监测系统研究与应用

随着技术发展,电视广告监测方式经历了人工识别、音频比对、视频比对、水印识别不同阶段的发展。视频基因技术(DWVD)利用数字水印加视频基因双重组合的方式实现电视广告监测,解决了以前广告监测中识别速度、准确率、抗干扰性等方面的不足。本文介绍了DWVD的技术原理及其在南京广电集团的应用,可供同行借鉴。



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Radio & TV Broadcast Engineering (RTBE) is a state-class technical journal, approved by the General Administration of Press and Publication, PR of China, authorized by the National Radio and Television Administration (NRTA), PR of China, sponsored by Academy of Broadcasting Planning (ABP), NRTA, and published by Editorial Department of RTBE. RTBE is an important medium, that publishes scientific and technological policies in broadcasting, reports achievements in building broadcasting cause, introduces high and new technologies, exchanges work experience and spreads various information. RTBE is mainly geared to the needs of departments responsible for the work of radio & TV industry at all levels, radio & TV stations at all levels, network companies, transmitting stations, microwave stations, satellite stations, program production units and electrified education systems, as well as is of reference value to managerial and technical personnel for public radio & TV facilities in industrial and mining enterprises, educational institutions, troops and so on.

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## [ 12 ] **Development and Field Test of 5G NR High-tower and High-power Broadcasting System**

Communication University of China took the lead in China to realize a 700MHz 5G NR broadcasting system supporting high-tower and high-power with completely independent intellectual property rights, which can meet integration requirements of future low frequency band (400MHz-1.2GHz) 5G high-tower and high-power broadcasting and base station multicast/unicast business. This paper introduces the system's functional modules and field test conditions. Test results show that the system has stable image quality and clear voice quality within a good signal coverage area. It can provide data support for the development of 700MHz 5G NR test networking and demonstration applications.

## [ 27 ] **Research on AVS3 Video Coding Technology Based on Deep Learning**

Technological innovation has brought about rapid development of digital TV and multimedia industries. The application of emerging video formats such as UHD video, VR video, 3D video, and intelligent monitoring video is increasingly enriching people's visual experience. With widespread application of these higher resolution and higher frame rate videos, the amount of video data is growing rapidly, which brings greater challenges to data storage and network transmission. Therefore, it is necessary to study video coding technology with higher coding efficiency to alleviate the pressure of massive data storage, transmission and application, and to provide effective guarantee for sustainable and healthy development of digital multimedia industry. This paper has conducted an in-depth study on AVS3 video coding technology based on deep learning. Related research results and performance test data can be used for reference.

## [ 62 ] **Design and Implementation of Radio and TV Multi-screen Intergration System Based on Wechat Public Platform**

With rapid development of digital TV, cable TV and triple play, live and on-demand programs available to users are growing explosively. However, complicated interface operation logic in traditional infrared remote control greatly reduces user experience of quickly finding and watching TV programs. With rapid development of mobile smart terminals and full popularity of WeChat clients, open capabilities of WeChat public platform provide a brand new solution for TV users' operating experience, sharing experience, and shopping experience. "WeChat TV Multi-screen Integration System" described in this paper combines open capabilities of WeChat public platform and uses public account or WeChat applet as the carrier to bind TV and mobile phone WeChat to realize multi-screen interaction between mobile phone and TV. Relevant practices can be used for reference by peers.

## [ 87 ] **Comparative Study of DTMB and 5G Terrestrial Broadcasting**

5G terrestrial broadcasting is an important alternative path for radio and television to move towards mobility and interaction. Through theoretical derivation and link-level simulation calculations, this paper compares and analyzes bit error rate, BICM transmission efficiency, system transmission efficiency and other indicators of DTMB and 5G terrestrial broadcasting under different channel conditions, and provides an index reference for iterative analysis of radio and television wireless transmission technology.

## [ 117 ] **Research and Application of TV Advertisement Monitoring System Based on Digital Watermarking Video DNA Technology**

With technology development, TV advertising monitoring methods have experienced different development stages, such as manual recognition, audio comparison, video comparison and watermark recognition. Digital Watermarking Video DNA (DWVD) realizes TV advertisement monitoring by using double combination of digital watermark and video DNA, which solves the shortcomings of recognition speed, accuracy and anti-interference in previous advertisement monitoring. This paper introduces technical principle of DWVD and its application in Nanjing Radio and Television Group, which can be used for reference by peers.