15:40– 17:00 | Room 16 | Thursday – Aug.29

ACADEMIC

SET – CALL FOR PAPERS

This panel will present a set of scientific papers that have been submitted to the Call for Papers promoted annually by SET.
The selected works will be published in the SET International Journal of Broadcast Engineering (SET IJBE) an international scientific journal whose objective is the diffusion of knowledge on communications engineering, especially of the broadcast areas and new media. The SET IJBE search current research that comprise the state of the art of these technologies.
Chair: **José Frederico Rehme** - Professor at Positivo University / Coordinator of SET Membership and Events Committee
Speakers:

• **ESTIMATION OF COVERAGE FOR ADVANCED TERRESTRIAL TELEVISION NETWORKS ATSC 3.0.**
Speaker: **Fernanda Marinho Magalhães** - Broadcast Project Engineer at LM Telecom - Record group
The ATSC 3.0 enables new broadband services, for this reason has been recognized as a reference for television transmission worldwide. This work presents a numerical investigation on coverage prediction using the Progira software. It is evaluated the coverage using ISDB-Tb and ATSC 3.0 standards in Santa Rita do Sapucaí-MG and São Paulo-SP cities.

• **PROPOSAL FOR IMPROVEMENT OF INFORMATION TRANSMISSION IN OFDM SYSTEMS THROUGH THE CBEDE METHODOLOGY**
Speaker: **Reinaldo Padilha** - Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP
The present study shows a model based on discrete events applied to a broadcasting system, using the Simulink of the MATLAB software, aiming to improve the transmission of
content, through of a pre-coding process of bits applying discrete events in the signal before the modulation process. This proposal brings a different approach, in which the signal transmission on the channel is realized in the discrete domain with the implementation of discrete entities in the process of bit generation.

• **DESIGN OF ULTRA-WIDEBAND TEXTILE ANTENNA FOR TV BROADCASTING**
Speaker: **Diego Arturo Pajuelo Castro** - PhD Candidate in Electrical Engineering at UNICAMP, SP-Brazil
Currently, Digital television (DTV) have been adopted in many places throughout the world and is received in different devices types such as laptop computers, portable media players, and smartphones. However, the current antennas used in these devices to receive DTV channels have drawbacks, low performance and non-practical physical structure in many situations.
This paper presents a flexible, lightweight and thin textile antenna for DTV, operating at ultra-wideband (UWB) 200 MHz - 800 MHz and can be embedded in the garment or bag that can be easily transported when folded. The antenna operation was

simulated and measured for verifying its performance and, based on the measurement results it was confirmed that the proposed flexible textile antenna has good performance, even in real conditions.

• **PROPOSALS FOR THE IDENTIFICATION OF TRANSMITTERS IN A SINGLE FREQUENCY NETWORK IN THE ISDB-TB SYSTEM**
Speaker: **Natalia Santiago** - Postgraduate Student at Mackenzie Presbyterian University
This article presents the study of methods for the identification of transmitters in a single frequency network in the Brazilian Television System, known as ISDB-Tb. Studying how the Gold sequences are created in order to generate the transmitter identification signal (TxID), introduced by the Advanced Television Systems Committee (ATSC) and how the information about the equipment ID of Network Synchronization Information (NSI) descriptor is interpreted that is inserted in the ISDB-T Information Packet (IIP) table of ISDB-Tb system. Also, is proposed the insertion of TxID signal, based on Gold sequences, in the ISDB-Tb system using two techniques: by the auxiliary channel (AC) and by the Layer Divison Multiplexing (LDM).

• **WIRELESS PRODUCTION TOOLS - PMSE - RADIO SPECTRUM SCANNING AT THE BRAZILIAN 2018 FORMULA ONE**
Speaker: **André F. Ponchet** - Associate Professor of Information Engineering at CECS, Federal University of ABC
Spectral scanning recordings were performed in the range of 410 to 870 MHz, covering wireless PMSE microphones at the 2018 F1 GP Brazil. The spectrum analyzers were installed at two different locations (2 km faraway), the International Compound and in the TV Globo booth at middle of the pit line. In three days many links of audio PMSE equipment were recorded, the essential data of which were continuously monitored and the spectrum recordings were compared with TV Globe's coordination information.

• **IMPLEMENTATION OF AN 8K-BRAZILDTV TRANSMITTER USING SDR**
Speaker: **Ricardo Seriacopi Rabaça** - Doctoral candidate in the Electrical Engineering and Computing Program at Mackenzie Presbyterian University
This paper presents an implementation of an 8K-BrazilDTV transmitter in Software Defined Radio/GNU Radio Companion. The main idea of this work is to provide a modified digital TV broadcasting system, based on the Brazilian system (ISDB-TB), using a bandwidth of 12 MHz and high order modulations, in order to achieve high bit rates and allow the transmission of content in Ultra High Definition (8K). The implementation is done using the GNU Radio Companion software along with a Software Defined Radio platform to transmit the Radio Frequency signal.

• **APPLIED MEDICAL INFORMATICS IN THE DETECTION AND COUNTING OF ERYTHROCYTES AND LEUKOCYTES THROUGH THE IMAGE SEGMENTATION ALGORITHM**
Speaker: **Ana Carolina Borges Monteiro** - Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP
Graduated in Biomedicine, holds a Master's degree in Engineering, she is currently a Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP, and a researcher at the Laboratory of Visual Communications

(LCV), developing research related to Digital Image Processing related to medical areas. Has affinity and expertise in Health and Clinical Analysis, with development in Matlab, C/C++, with topics of interest in Hematology, Medical Informatics, Cell Biology, Cell Pathology, Telecommunications, Broadcasting and Deep Learning.

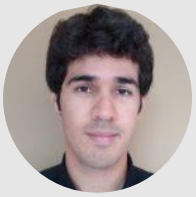
• **GLOBOPLAY'S GRAPHQL PLATFORM: PROVIDING DATA TO ANY OTT PRODUCT**
Speaker: **André Luis dos Santos Eberhardt** - Software Architect / Manager at Globo.com
Globoplay is a video streaming platform created and developed by Grupo Globo, which is the largest media and communication group in Brazil and Latin America. In order to provide a single data source to all interfaces (Web, TV, iOS, android, etc), reduce time to market and ensure ubiquity among all clients, we created Globoplay's GraphQL platform - A new microservices architecture using Nodejs and an API gateway using GraphQL responsible for providing all data to any kind of OTT Product.

• **IMPLEMENTATION OF 8K-BRAZILDTV SYSTEM RECEIVER USING SDR**
Speaker: **George Henrique Maranhão Garcia de Oliveira** - Doctoral candidate in the Pos Graduation Electrical Engineering and Computing Program at Mackenzie Presbyterian University
This work presents the 8K-BrazilDTV receiver implementation. This implementation was done by using GNU Radio Companion program, installed in a computer with Linux and using a Software Defined Radio Board. This system uses 12 MHz (2 ISDB-TB channels) bandwidth to transmit Ultra High Definition content (8K)..

• **AUTOMATIC SKIN LESIONS CLASSIFICATION FROM DERMOSCOPIC IMAGES EMPLOYING DEEP LEARNING**
Speaker: **Pablo David Minango Negrete** - M.S.c candidate by Department of Communications (DECOM), Faculty of Electrical and Computer Engineering (FEEC) at State University of Campinas (UNICAMP)
Skin cancers occur due to abnormal growth of the cells can give rise to several types of skin cancer, being divided into two types melanoma and non-melanoma. Skin cancer which is in Brazil represents 25% of the malignant tumors diagnosed, being the majority due to the excessive exposure to the sun's ultraviolet rays.
The present study is based on AlexNet, which is a Deep Learning architecture, the experiments are conducted through 1400 and 2400 images, after twice training with different optimizer, SGD is the better optimizer with 99.79% of accuracy and 0.0120% of loss in training.

Chair: José Frederico Rehme - Professor at Positivo University / Coordinator of SET Membership and Events Committee
José Frederico Rehme is Coordinator and Professor of Electrical Engineering and Energy Engineering at Positivo University and Director of Engineering at TVCi.

Fernanda Marinho Magalhães - Broadcast Project Engineer at LM Telecom - Record group
Fernanda Marinho Magalhães has been attending post-graduation in Network and Telecommunications Engineering at INATEL. Graduated in Electrical Engineering at Nove de Julho University. Graduated in Economics at UESC and Technologist in Electronics at CEFET/BA. She has been working with Television Broadcasting for over 15 years. She worked at Hitachi Linear, which is a transmitter factory and at Record TV, which is a television broadcasting company in the transmission field. She currently works as a Broadcast Project Engineer at LM Telecom - Record group.

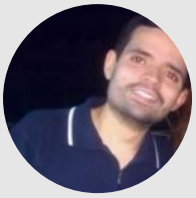


Reinaldo Padilha - Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP
Graduated in Computer Engineering, he is currently a Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP, and a researcher at the Laboratory of Visual Communications (LCV). Has affinity in the area of technological and scientific research as well as knowledge in programming and development in C/C++, Python, Java, and .NET languages, with topics of interest in Simulation, Operating Systems, Wireless and Networking, Broadcasting, Telecommunications Systems, Digital Signal Processing, Digital Image Processing and Deep Learning.

Diego Arturo Pajuelo Castro - PhD Candidate in Electrical Engineering at UNICAMP, SP-Brazil
Graduate in in Electrical Engineering from the Universidad Peruana de Ciencias Aplicadas (UPC), Lima, Peru and MSc degree in Electrical Engineering at UNICAMP. Currently is PhD Candidate in Electrical Engineering at UNICAMP, SP-Brazil. Research Interests: Video and audio coding, Image processing, Digital television and Satellite communications.

Natalia Santiago - Postgraduate Student at Mackenzie Presbyterian University
Graduated in electrical engineering with emphasis on electronic, automation and telecommunication from Mackenzie Presbyterian University (2018). Currently, she is a postgraduate student of the electrical and computer engineering master of science program at Mackenzie Presbyterian University.

André F. Ponchet - Associate Professor of Information Engineering at CECS, Federal University of ABC



Ricardo Seriacopi Rabaça - Doctoral candidate in the Electrical Engineering and Computing Program at Mackenzie Presbyterian University
Ricardo Seriacopi Rabaça received the B.Sc. and M.Sc. degrees in electrical engineering from the Mackenzie Presbyterian University, Sao Paulo, Brazil, in 2013 and 2017, respectively. Actually, he is a doctoral candidate in the Electrical Engineering and Computing Program at Mackenzie Presbyterian University and participates in projects in the Digital TV Research Laboratory at Mackenzie Presbyterian University. He participated in some national and international publications about telecommunications and broadcasting, covering topics such as diversity techniques applied to digital television, implementation of broadcasting systems using ISDB-TB and ATSC 3.0 standards, with use of new methods of coding, modulation, multiplexing, among others.

Ana Carolina Borges Monteiro - Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP
Graduated in Biomedicine, holds a Master's degree in Engineering, she is currently a Ph.D. Candidate by the DECOM, Faculty of Electrical and Computer Engineering (FEEC) at UNICAMP, and a researcher at the Laboratory of Visual Communications (LCV), developing research related to Digital Image Processing related to medical areas. Has affinity and expertise in Health and Clinical Analysis, with development in Matlab, C/C++, with topics of interest in Hematology, Medical Informatics, Cell Biology, Cell Pathology, Telecommunications, Broadcasting and Deep Learning.

André Luis dos Santos Eberhardt - Software Architect / Manager at Globo.com
Passionate about making a difference. More than 10 years of experience with software development. Currently working as Software Architect / Manager at Globo.com. Responsible for thinking and planning the evolution of Globoplay's architecture as well as encouraging new talents.

Doctoral candidate in the Pos Graduation Electrical Engineering and Computing Program at Mackenzie Presbyterian University
George Henrique Maranhão Garcia de Oliveira received the B.Sc. and M.Sc. degrees in electrical engineering from the Mackenzie Presbyterian University, Sao Paulo, Brazil, in 2014 and 2016, respectively. He's currently doctoral candidate in the Pos Graduation Electrical Engineering and Computing Program at Mackenzie Presbyterian University. He has experience in Electrical Engineering with emphasis on characterization of ISDB-T receivers, testing and configuration of SFN networks and LTE interference tests on digital TV. His fields of study are broadcasting and Software Defined Radio. He's engineer at Digital TV Research Laboratoty at Mackenzie Presbyterian University.

Pablo David Minango Negrete - M.S.c candidate by Department of Communications (DECOM), Faculty of Electrical and Computer Engineering (FEEC) at State University of Campinas (UNICAMP)
Pablo David Minango Negrete graduated in Electronic Engineering at the University Polytechnic Salesian (UPS). Currently, He is an M.S.c candidate by Department of Communications (DECOM), Faculty of Electrical and Computer Engineering (FEEC) at State University of Campinas (UNICAMP). Professional with engineering experience at Configuration and maintenance of repeater equipment, link antennas, calibration of equipment used in radio frequency in the VHF frequency range for two-way radio equipment. Knowledge in MotoTRB, TCP/IP, WAN Networks. Research Interests: Deep Learning, Machine Learning, Digital Image Processing with Medical’s images.