



**Contest themes required for the associate professor job position no.10
of the Department of Electronics and Telecommunications for the
academic year 2012-2013**

Data Compression and Coding

1. Basics in data and image processing.
2. Human visual system, fundamentals of image perception and representation.
3. Image transforms.
4. Data correlation and methods for redundant information suppression.
5. Singular value decomposition and its application in data compression.
6. Image quality assessment methods, basics in source coding and decoding and video processing.
7. Motion detection and estimation.
8. Basics in information theory, Huffman and LZW coding.
9. Arithmetic coding.
10. The JPEG still picture compression standard.
11. Sub-band decomposition, wavelet transform and JPEG2000 standard.
12. Audio data compression.
13. The MP3 and MP4 audio compression standard.
14. MPEG – 1 and MPEG – 2 video compression standards.

References

- [1] Mohammed Ghanbari: Standard Codecs: Image compression to Advanced Video Coding, Institution of Electrical Engineers , 2003.
- [2] R.O. Duda, P.E. Hart, and D.G. Stork, Pattern Classification, New York: John Wiley & Sons, 2001.
- [3] D. D. Salomon: Data Compression: The Complete Reference (Fourth Edition), Springer – Verlag, 2007



Telecommunications Software

1. History of telecommunications.
2. Techniques and Internet communications protocols.
3. Webpage development and software applications. Frontpage. WYSIWYG Web Builder.
4. Dynamic Webpage development, blogs, forums and protected social networks.
5. Electronic e-mails. Protocols and software. Outlook. Mozilla Thunderbird.
6. Virtual private network - VPN. EasyVPN. Remobo. Hamachi.
7. Voice over IP –VoIP technology. Voce Online Romtelecom, Express Talk NCH.
8. Instant messaging software. Messenger, Skype, Comodo Secure messaging.
9. Teleconferencing softwar. iVisit Presenter. Mikogo. Openmeetings.
- 10.Remote based software for communications. TeamViewer. Comodo EasyVPN
- 11.H.264 standard and streaming.
- 12.Surveillance technology and software.
- 13.Unified Modeling Language – UML for telecommunications.

References

- [1] Anton A. Huurdeman, The Worldwide History of Telecommunications, John Wiley & Sons, Inc., ISBN 0-471-20505-2, Hoboken, New Jersey, 2003.
- [2] Adrian Farrel, The Internet and its Protocols – The Comparative approach, ISBN 1-55860-913-X ELSEVIER, San Francisco, 2004.
- [3] John Mairs, VPNs:A Beginner's Guide, McGraw-Hill, Osborne, ISBN 0-07-219181-3, Berkeley, California, 2002
- [4] ***, VoIP Technologies. A comprehensive guide to Voice over Internet Protocol (VoIP), Nortel Technical Training Series, ISBN 978-0-9801074-0-1, Nortel Press, March, 2008
- [5] <http://www.teamviewer.com/index.aspx>
- [6] <http://www.comodo.com/>