

Medical informatics: List of requirements for the final test

Medical imaging analogue and digital picture, sampling and quantization, brightness and contrast of colours, histogram of colours and its equalisation, pixel and voxel, acquisition of coloured RGB images, noise in image, image formats, image compression, aliasing, frequency filtration, edge detection, thresholding, main medical imaging methods using computers /digital radiology, computing tomography methods/, contraindications to examination by medical imaging methods, PACS and e-PACS

Basics of computer security & data protection security risks, access protected by password, biometrics, cryptology, viruses, spyware and other malicious software, antivirus and antispyware programs, firewalls, spam, hoax, phishing, pharming, attacks on computer, hacking and cracking, social engineering, data protection, backuping, archivation and comprimation of data, computer maintenance, updates, intellectual property and authorship rights protection, role of computer security in medicine & health care

Biomedical statistics & decision support descriptive and inductive statistics, types of medical data: categorical / numerical data, tabular and graphical presentation of data, basic descriptive statistical terms: mean / mode / median / range / quartiles / percentiles / variance / standard deviation, introduction to probability, statistic population, random selection, probability distribution (normal /Gaussian/ distribution), significance of testing of statistical estimation and hypothesis testing for medicine, basic statistical terms in epidemiology: incidence / prevalence / mortality / lethality of disease, sensitivity and specificity of diagnostic test.

Artificial intelligence in medicine artificial intelligence, machine learning (ML), deep learning, convolutional neural networks, training and validation of ML models, prediction of ML models.

Medical information principles of Evidence-based medicine (EBM), clinical trials, meta-analysis, guidelines, review papers, hierarchy of medical evidence.

Technical aspects of medical informatics and computer network and network services hardware, software, bit, byte, operating system, computer network, Intranet, Internet, peer-to-peer vs. client-server architecture, PAN, LAN, MAN, WAN, network services and communication protocols (e-mail, WWW, IM, VoIP, FTP, ...), address of computer in network (IP address, MAC address, domain address)