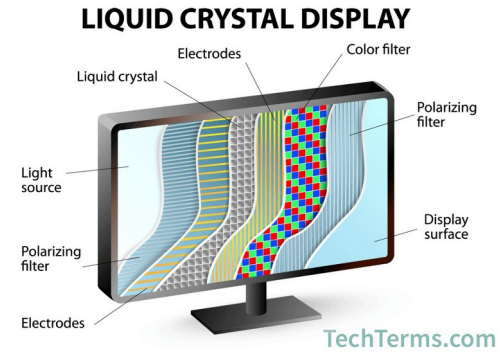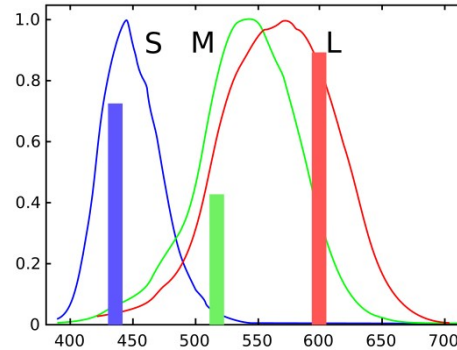# Conclusion

# Course summary – acquisition
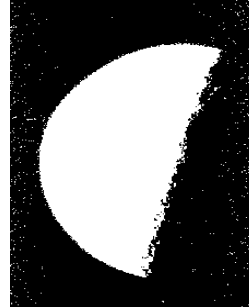
- Images
  - Image formation
  - Digital images
  - Color perception
- Videos
  - Frame-rate
  - Interlaced video
  - Television formats
- Sound
  - Digital sound
  - Sampling rate
  - Quantization

# Course summary - manipulation

- Images
  - Processing
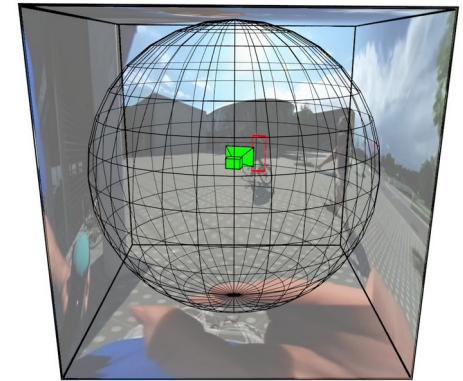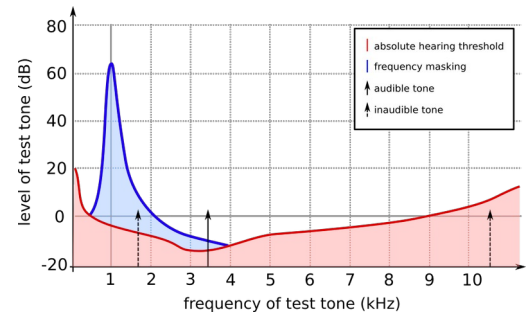  - Filtering
  - Transformations
  - Merging
- Videos
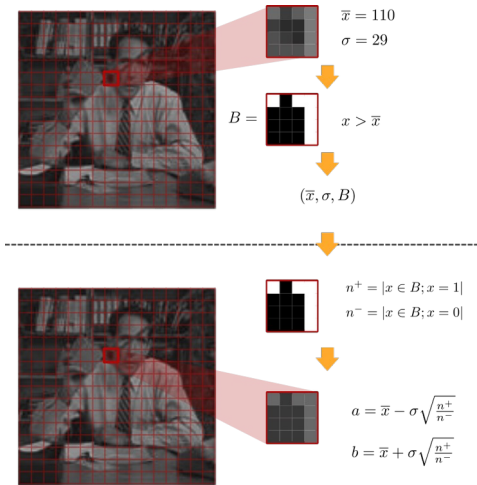  - Stabilization
  - Transitions
- Sound
  - Linear filters
  - FFT

# Course summary – compression

- Data compression
  - Entropy coding
  - Dictionary coding
- Image compression
  - PNG, JPEG
- Video compression
  - Intra and inter frame compression
  - MPEG-1, MPEG-2, MPEG-4
- Sound compression
  - Psycho-acoustical model
  - FLAC, MPEG-1 Layer 1, 2, 3



$\bar{x} = 110$
$\sigma = 29$

$B =$    $x > \bar{x}$

$(\bar{x}, \sigma, B)$

$n^+ = |x \in B; x = 1|$
$n^- = |x \in B; x = 0|$

$a = \bar{x} - \sigma\sqrt{\frac{n^+}{n^-}}$
$b = \bar{x} + \sigma\sqrt{\frac{n^+}{n^-}}$

# Course summary – retrieval

- Information retrieval
  - Documents, terms
  - Inverted index
  - Weighting
- Image and video databases
  - Describing images
  - Image
  - Image decomposition
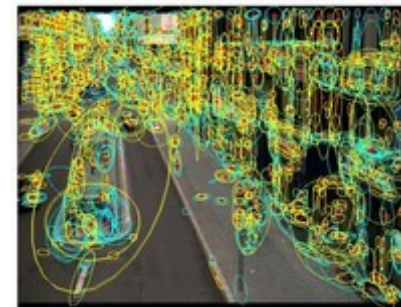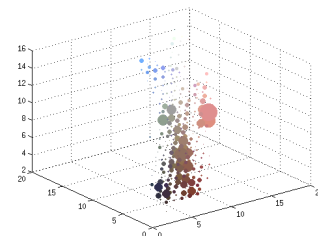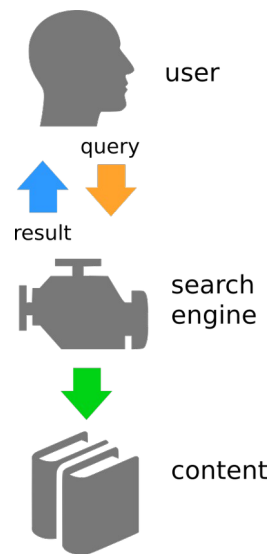
# Course summary - interaction

- Augmented reality
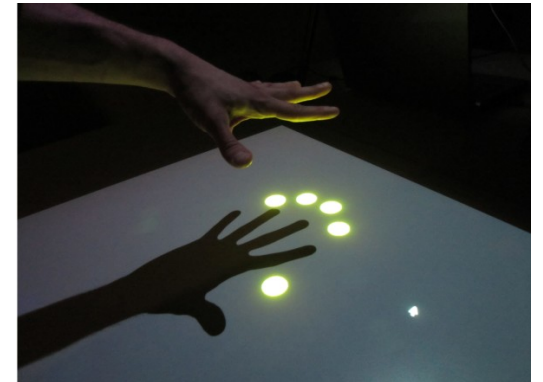  - Binary marker
  - Textured surface marker
  - Realistic rendering
- Interactive surfaces
  - Technologies
  - Use-cases

# Towards the finish line

- Finish practical assignments (if you have not done so already)
- Written exam
  - All exercises must be completed before exam
- Oral exam
  - Must pass written exam
  - Mandatory for some students
- Final grade
  - Average of practical assignments and written exam
  - Can be changed by the oral exam

# Examination

- Written exam
  - 90 minutes
  - ~7 questions
  - Theoretical and practical assignments
- Oral exam
  - Mandatory only for students who score less than 60-70% on written exam (depending on the overall results of the exam)
  - Focus on topics that you did not know at written exam
  - Theory questions

# Beyond the course

- Computer vision at FRI
  - Machine perception (UNI)
  - Advanced computer vision methods (MAG)
  - Deep learning (MAG)
- Multimedia in ViCoS Lab
  - Diploma and Master theses
  - Practical work (Obštudijske dejavnosti)
  - Summer projects

# Multimedia in ViCoS Lab

- Visual retrieval systems
  - Visual retrieval as a web service
  - Automatic photo collection annotation
- Augmented reality
  - Deep learning for camera localization
  - Sensor fusion on mobile phones
  - VSLAM evaluation environment
  - Multi user AR
- Natural interaction
  - Depth camera, gesture recognition
  - Fusing tactile and visual information
  - Interactive object recognition
- 3D reconstruction and modeling
- Learning image and video compression