

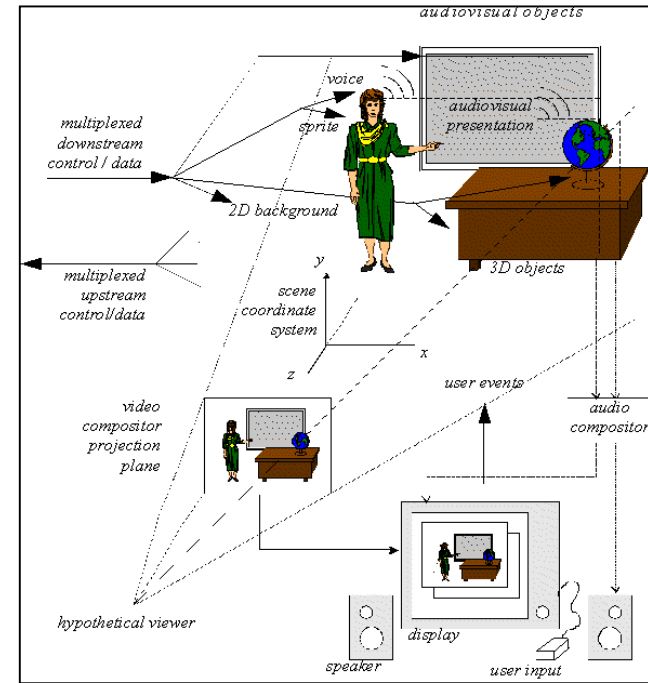
SOUND AND

IMAGE

SPECIALIZATION

Vigo, septiembre de 2021

Sound and Image



What will I do at
Sound and Image?



*Signal processing
+ Programming*

Systems

Fields and measurements

2°

Fundam. of Sound and Image

3° 1C

Sound Processing

Video and Television

Fundamentals of acoustic engineering

3° 2C

Fundamentals of image processing

Interactive audio systems

Image systems

Design of audiovisual installations

Architectural acoustics

4° 1C

Image processing and analysis

Video Games and Virtual Reality

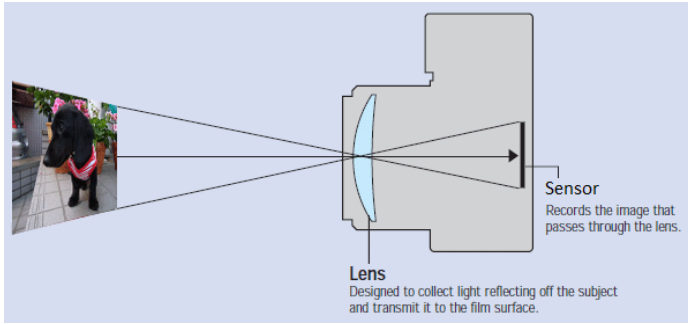
Audiovisual production

TFG

Advanced Acoustics

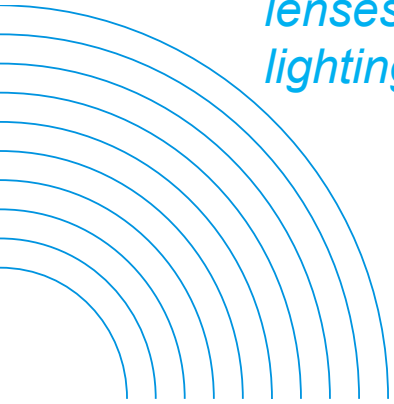
Noise Measurement Techniques and Legislation

Technology: Capture and Representation



*Cameras,
lenses,
lighting*

Well, I thought so...



*Audio
capture*



Speakers

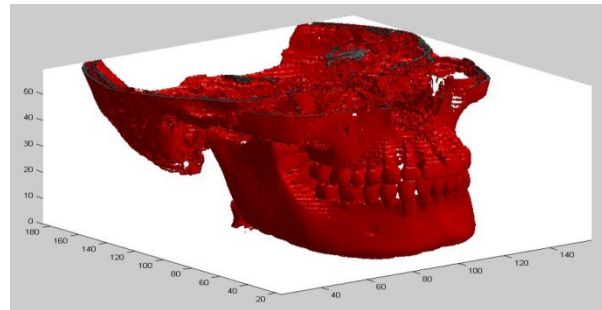
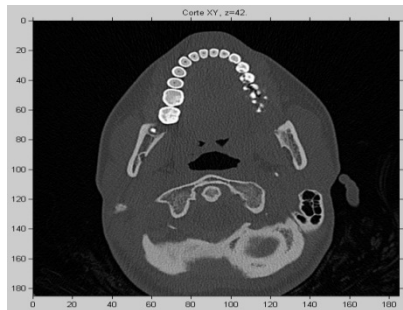
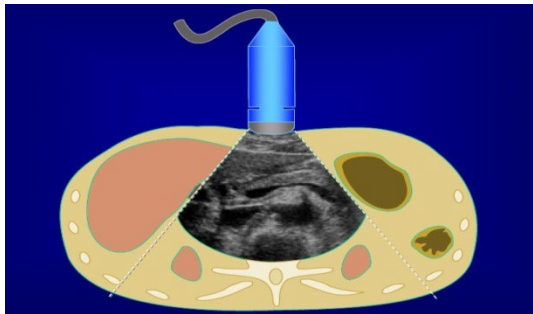
Display's



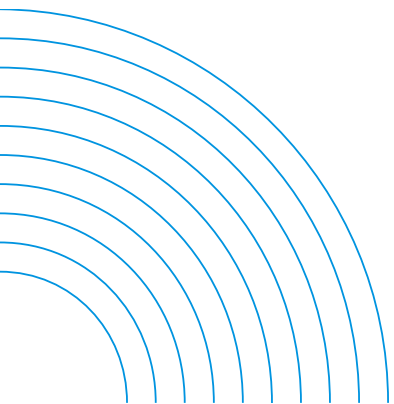
*Special
devices*

Technology: Capture and Representation

Medical imaging



This too!!!

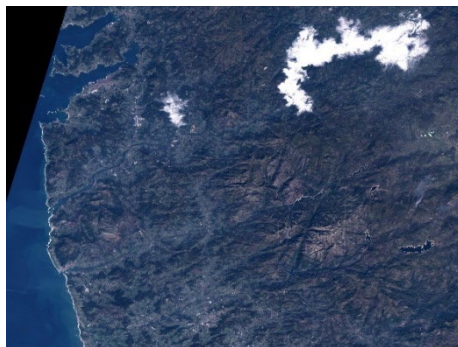
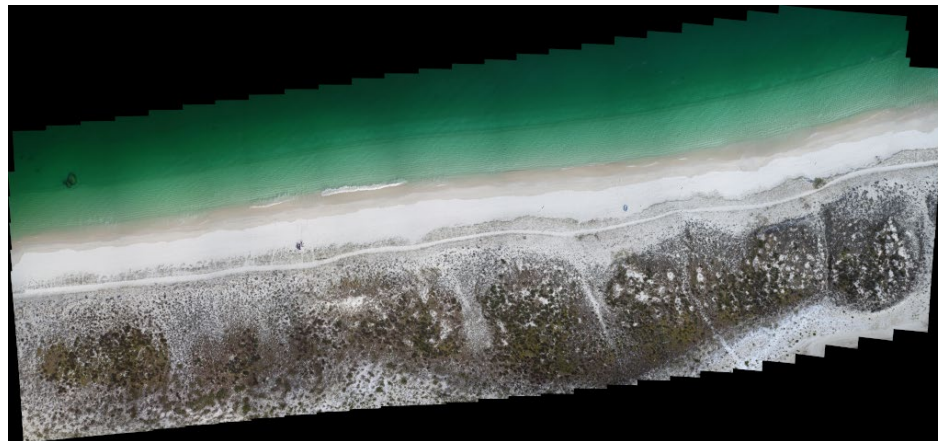


Audiovisual Installations

Technology: Capture and Representation

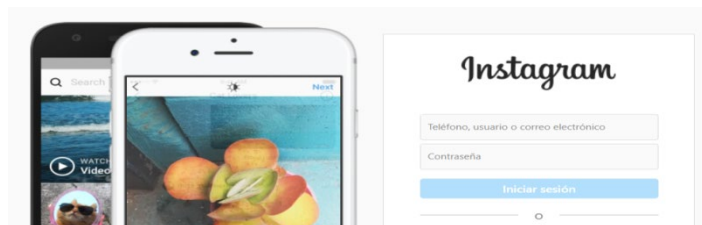
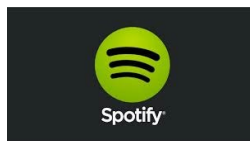


*Photogrammetric
imaging with drones*



Satellite image

And this...!!!!



Anything to do with this?

Audio and Video Coding



Y =

87	89	101	106	118	130	142	155
85	91	101	105	116	129	135	149
86	92	96	105	112	128	131	144
92	88	102	101	116	129	135	147
88	94	94	98	113	122	130	139
88	95	98	97	113	119	133	141
92	99	98	106	107	118	135	145
89	95	98	107	104	112	130	144

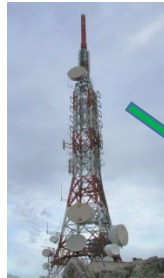
DCT

DCT Coeff =

898.0000	-149.5418	26.6464	-14.0897	0.7500	-5.7540	3.5750	0.0330
12.1982	-16.5235	-7.6122	5.2187	-0.2867	-1.9909	8.4265	1.2591
5.3355	-2.6557	2.8410	-9.9277	2.8614	8.4556	-3.1945	-3.1640
1.9463	-2.7271	1.5106	2.8421	-2.1336	-2.7203	-2.7510	5.4051
0.7500	-2.0745	0.8610	0.2085	2.5000	1.8446	2.0787	2.4750
-7.9536	-2.6624	2.6308	0.4010	0.4772	3.3000	1.7304	0.3942
-4.1042	-0.1650	-0.6945	0.0601	0.0628	-0.7874	-0.8410	0.3496
-3.4688	2.3804	0.1559	0.8696	0.1142	-0.5240	-3.9974	-5.6187



Coding allows the efficient representation of images and sound, reducing the size of files and making it possible to share them...



Digital television

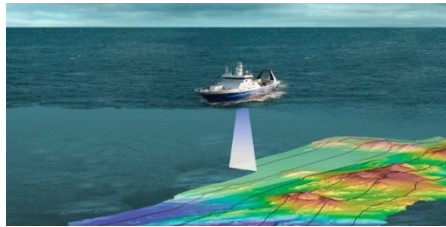
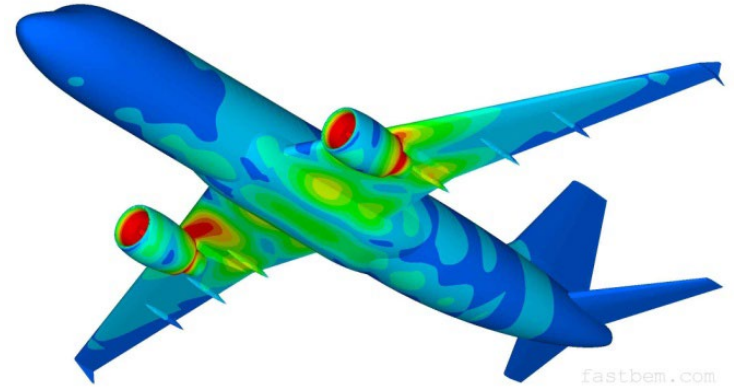


Streaming

Acoustics: Sound Waves

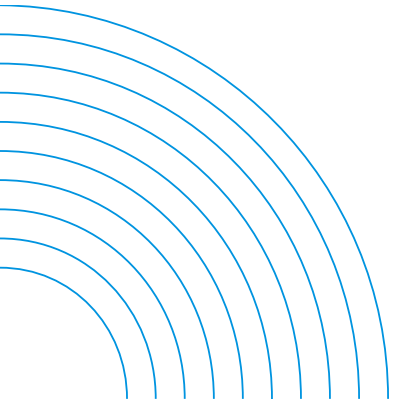
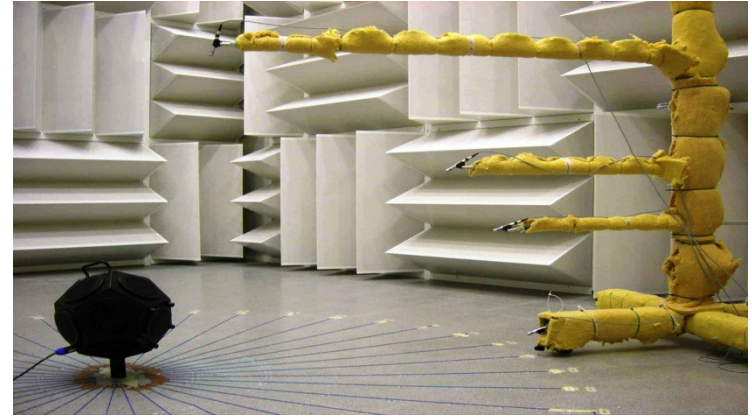
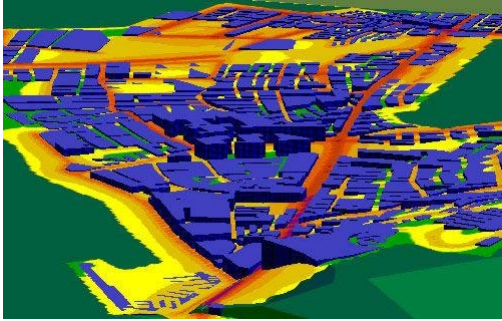


Lesser known things...



*Industrial applications (automotive, aeronautics), noise and vibration measurement, fault detection...
Underwater acoustics: sonar, bathymetry*

Acoustics (II)



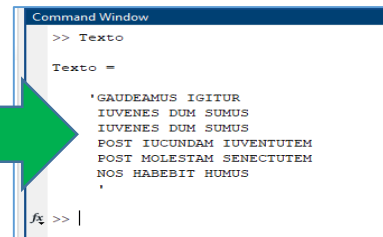
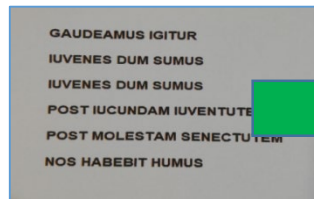
*Environmental noise
and room acoustic
design*

Audio and Video Processing

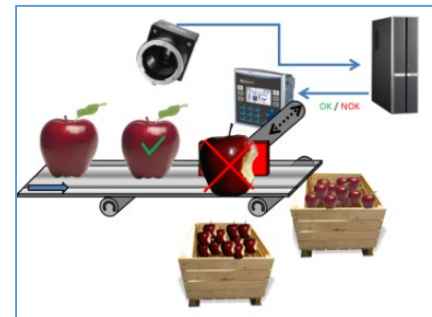


Voice recognition

Image Analysis/Recognition (OCR, ...)



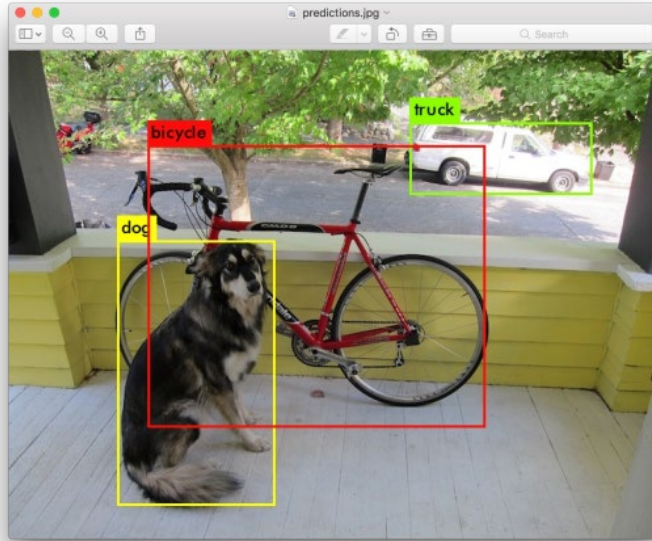
Biometric



Machine/industrial vision

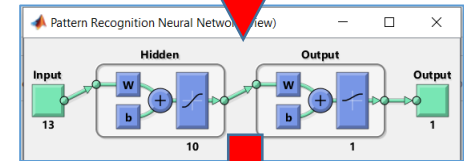
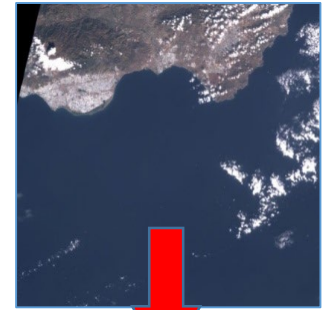
Artificial Intelligence /Machine Learning!!!

Advanced Processing: Neural Networks



*Object recognition based on
deep learning (applications:
autonomous car, ...)*

*Satellite image,
processed with
neural networks*



Virtual Reality, Video Games and Industrial Applications



Video Games



3D Capture



Augmented reality



Virtual Reality, Video Games and Industrial Applications



*Industrial simulators,
digital twins..*



