



Master's Degree in ICT for Internet and Multimedia

discover more >

<https://mime.dei.unipd.it/>



What is ICT?



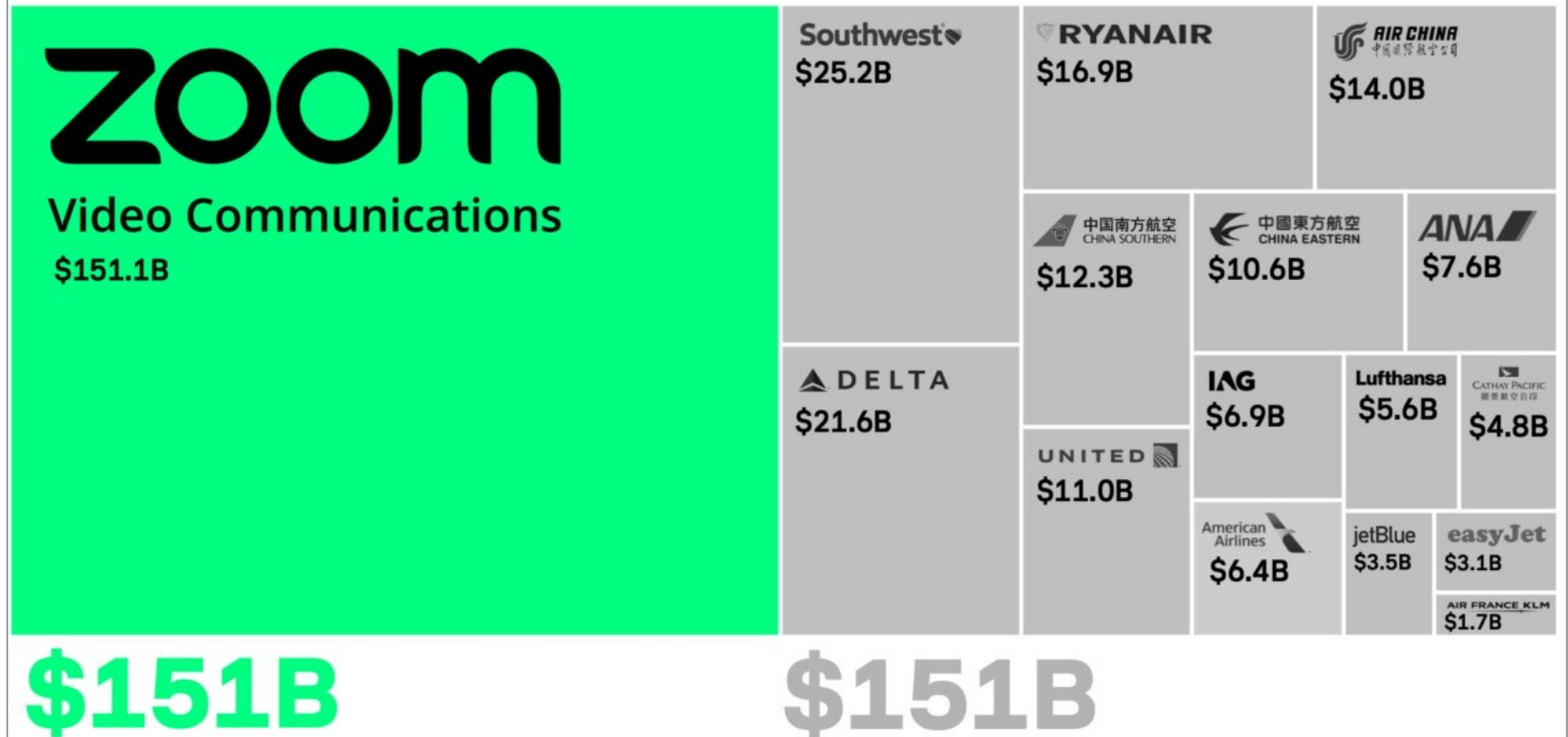
Information and Communication Technology

systems (hardware and software) for transmitting, sharing, and processing information

How much is “transport” worth?

TNMT

Market capitalization of Zoom Video Communications vs. the 15 biggest airlines



Notes: Airlines selected based on # of passengers transported in 2019; market cap as of Oct. 26, 2020
Source: Lufthansa Innovation Hub, TNMT.com, Yahoo Finance



machine learning
for healthcare



communication
technologies

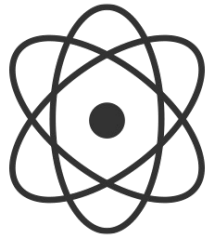


smart
industry 4.0



multimedia
& digital arts

MIME



quantum
information

photonics



Internet & security



medical ICT

ICT is pervasive

- Internet, Web browsing, home-banking, ...
- Multimedia streaming, YouTube, Vimeo, PrimeVideo, etc.
- Emails, mobile calls, ...

- **But this is only the tip of the iceberg...**
 - **Smart Cities:** IoT sensing/compression/TX technologies
 - **Indoor, outdoor, vehicular networks:** radar & TX technologies
 - **Multi-access Edge Computing:** edge assisted communications & learning at the network edge (5G/6G mobile nets)
 - **Multimedia:** knowledge extraction from videos, point-clouds, etc., augmented & virtual reality, the metaverse, ...
 - **New communication paradigms:** intelligent reflecting surfaces, underwater communications, massive MIMO, ...
 - **Machine-learning & decision making** for internetworking
 - **Network and information security**
 - ...



The modern ICT engineer – tools

- **Solid mathematical background**
 - Algebra, geometry, probability, statistics, signal theory, ...
- **Cross-disciplinary tools**
 - **Programming**
 - **C/C++**: embedded and Internet-based systems
 - **Python**: scientific computing, machine learning, system integration
 - **Machine learning**
 - Classification, feature extraction, unsupervised vs supervised learning, deep learning, reinforcement learning, ...
 - **Optimization theory & methods**
 - Convex optimization, Mixed-Integer Linear Programming (MILP), sequential optimization for networking, ...



The modern ICT engineer – **technology**

- **Solid background on modern ICT technology**
 - **Communications:** 5G systems, Wi-Fi, Internet, net. protocols, ...
 - **Multimedia:** signal processing & transmission, ...
 - **TX media:** photonic & quantum technology, fiber optics, antennas, mm-waves, ...
- **Deepening knowledge on specific ICT *applications***
 - ICT for Industry 4.0
 - Sensing systems, Internet of Things (IoT)
 - ICT for healthcare, e-health
 - More later, ...



MIME

- A modern & flexible Master's Degree (2 years)
- Centered on
 - ICT technology, ICT tools
 - With an eye on **modern ICT systems & applications**
 - 5G (6G) mobile networks, Internet of Things,
 - Industry 4.0, virtual/augmented reality, e-health, ...
- Allows you to shape your study path
 - **Type of technology:** communications, multimedia, TX media
 - **Cross-disciplinary tools:** programming, machine learning, optimization
 - **Application domain:** mobile nets, Internet, IoT, e-health, ...

MIME

STUDY PATHS

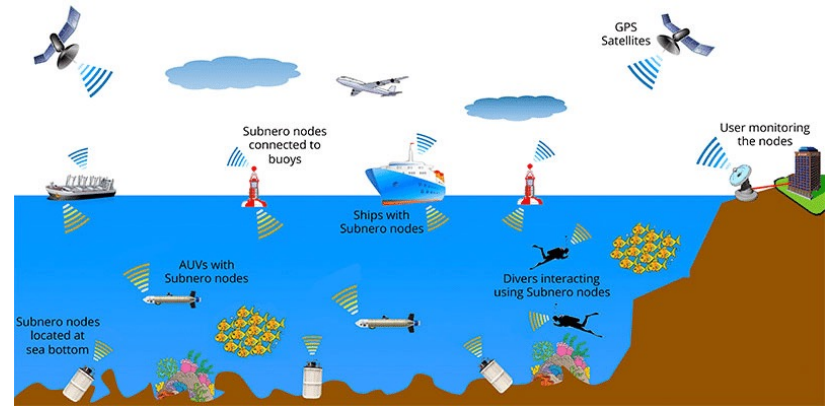
Four curricula (Cx), eight tracks (Tx)

- **C1 – Communications**
 - T1. Communication technologies
 - T2. Smart Industry 4.0
- **C2 – Cybersystems**
 - T3. Internet & security
 - T4. Multimedia & digital arts
- **C3 – Photonics**
 - T5. Photonics
 - T6. Quantum information
- **C4 – ICT for Life & health**
 - T7. Medical ICT
 - T8. Machine learning for healthcare

Communications

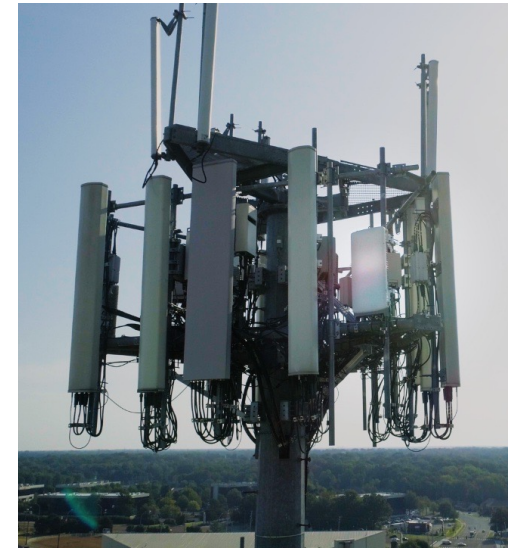


Internet of Things



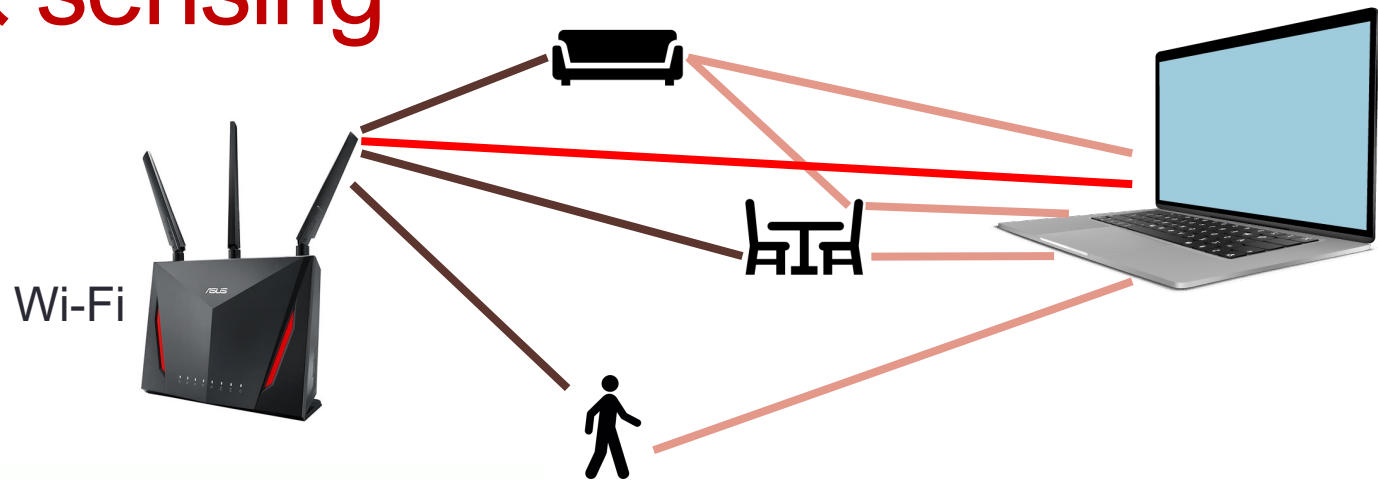
Underwater communication networks

5G mobile networks

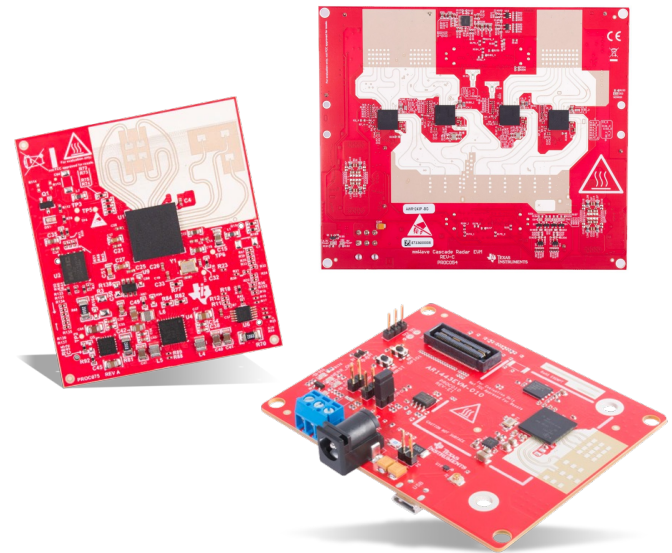
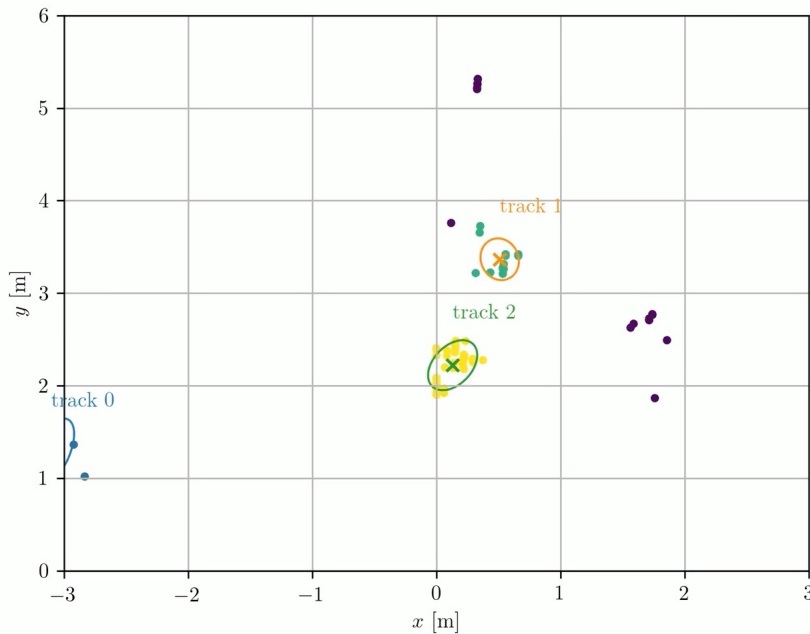


Massive MIMO

Comm & sensing



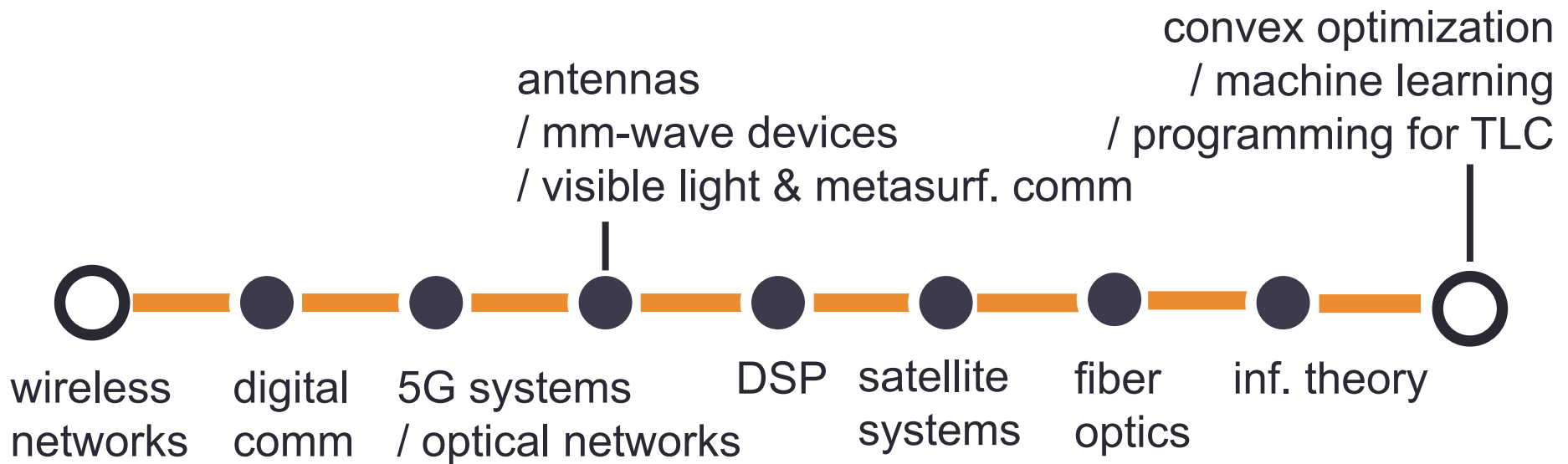
Realtime user tracking



mm-wave radar devices

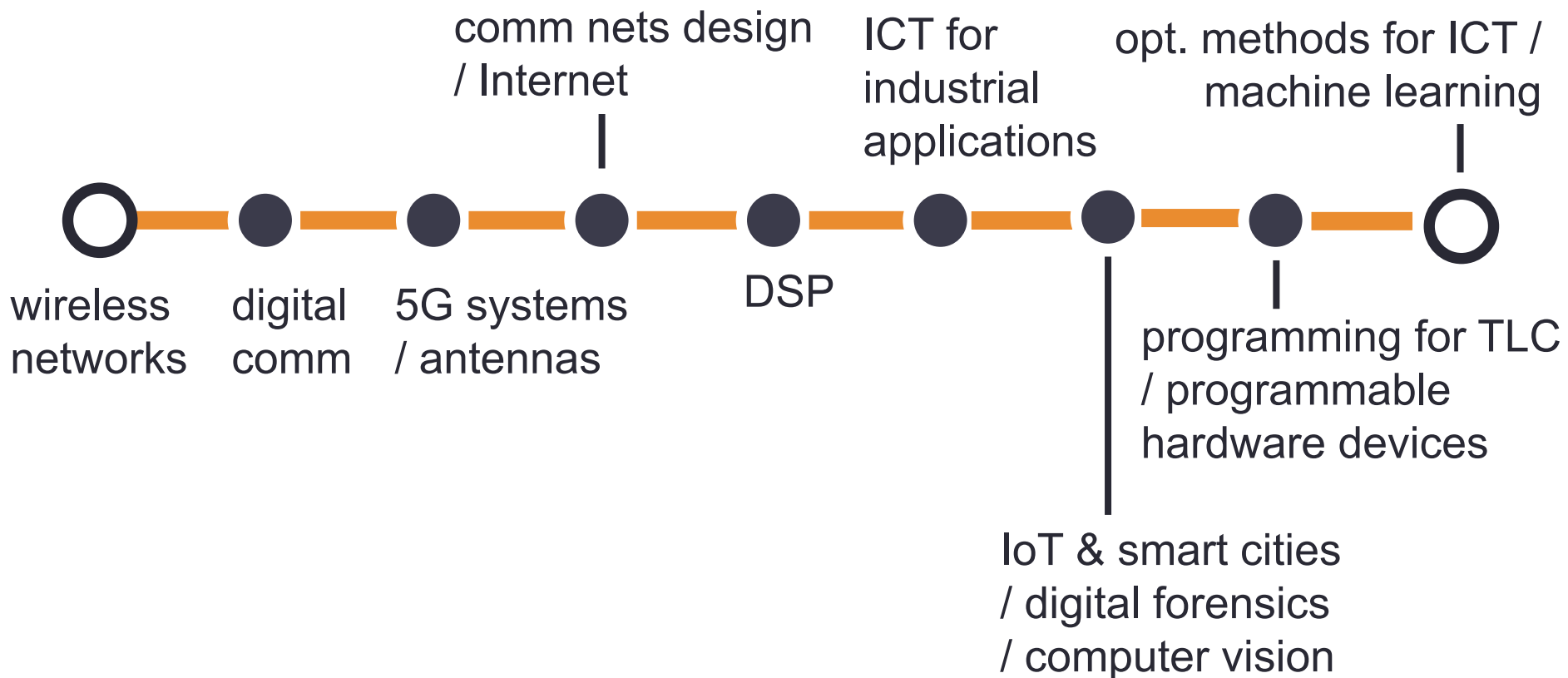
T1. Communication technologies

Related subjects

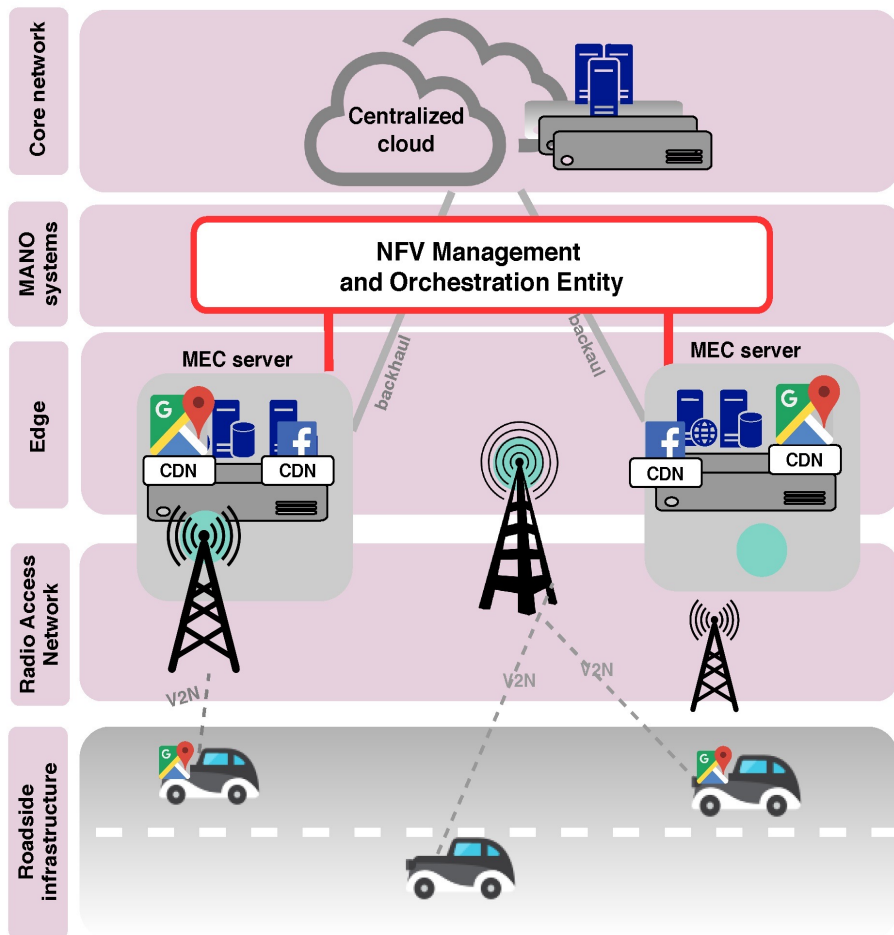


T2. Smart industry 4.0

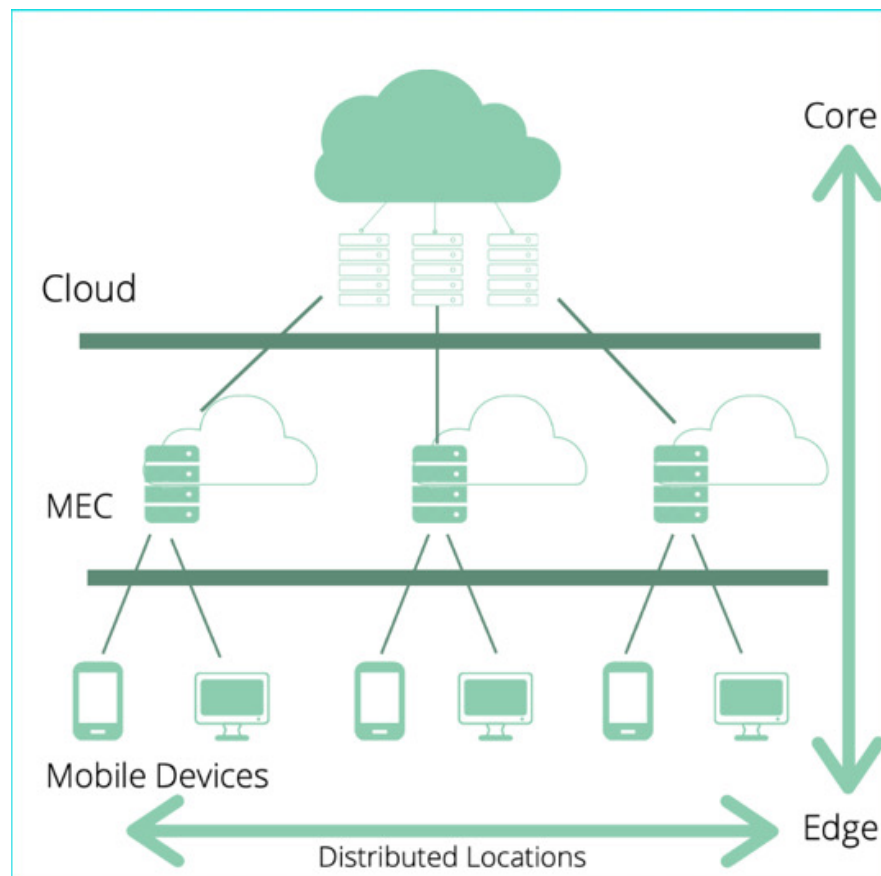
Related subjects



Networking



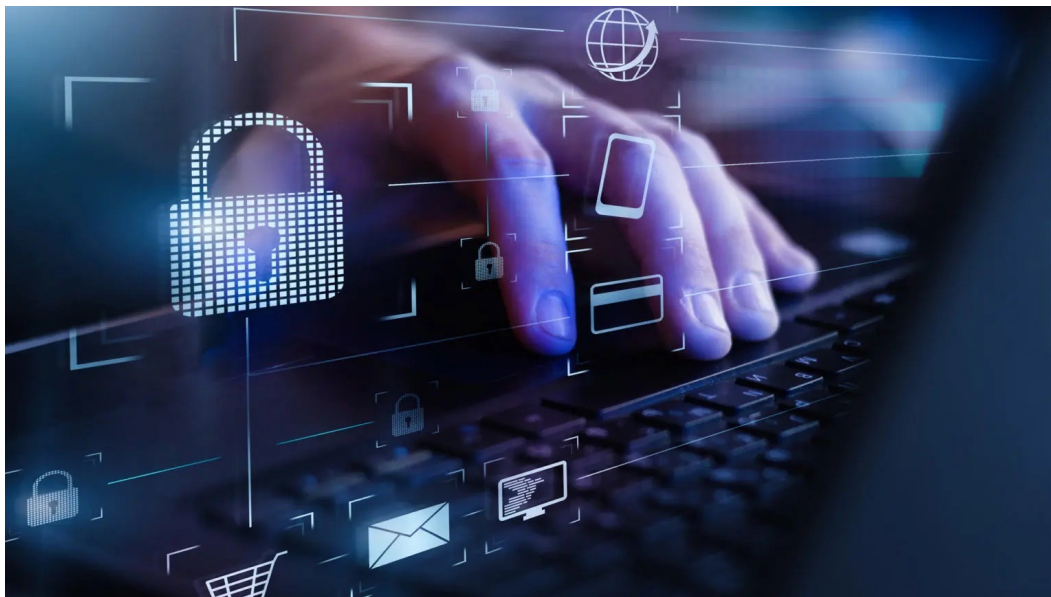
Multiaccess Edge Computing (MEC)



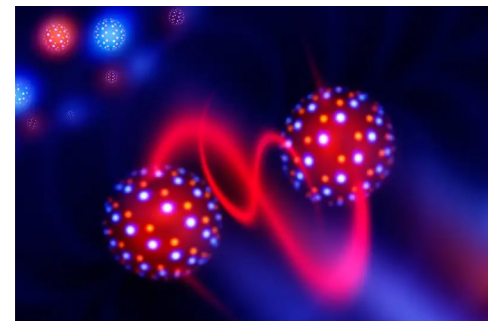
Security



Secure satellite positioning



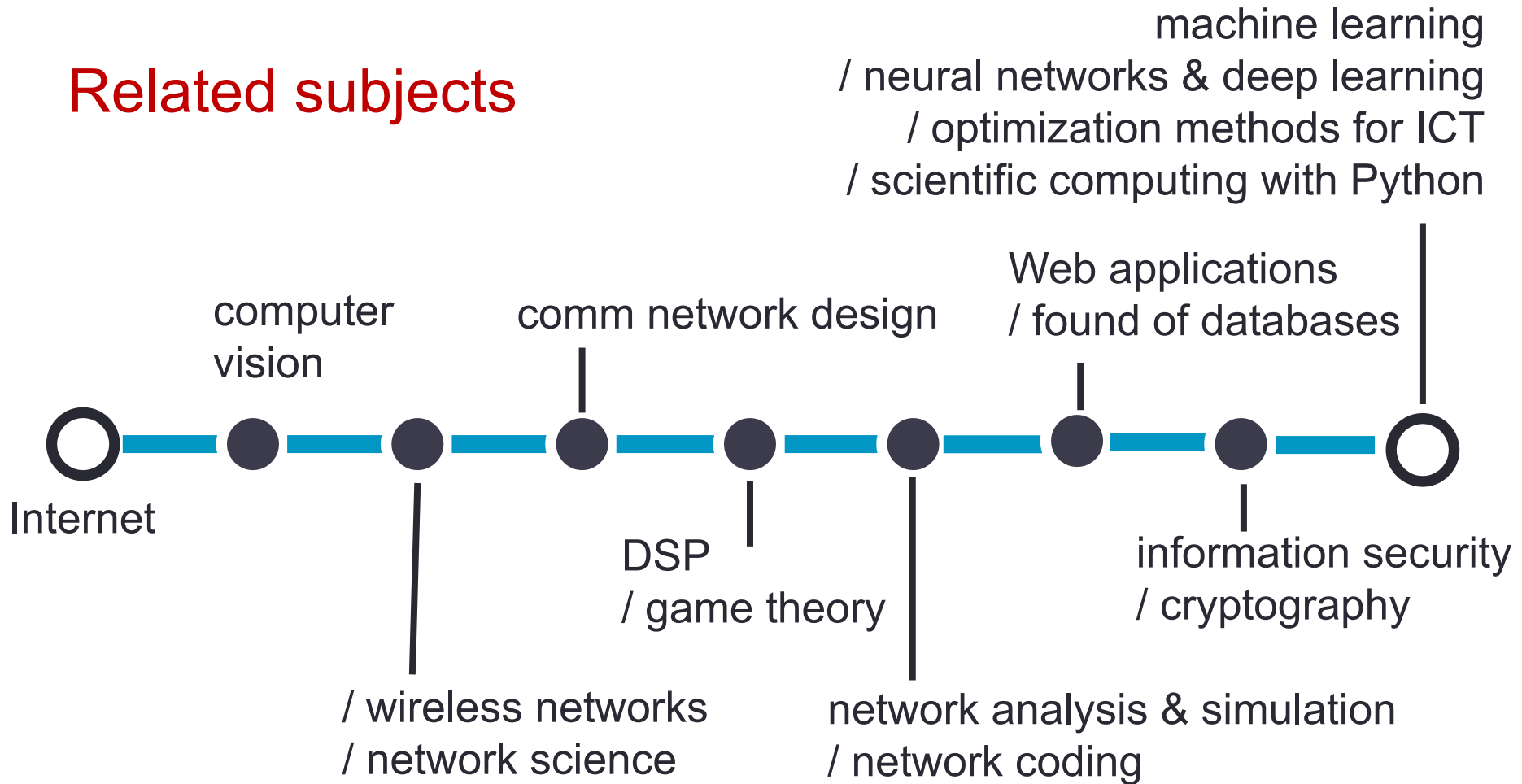
Privacy & data protection for network systems



Quantum cryptography

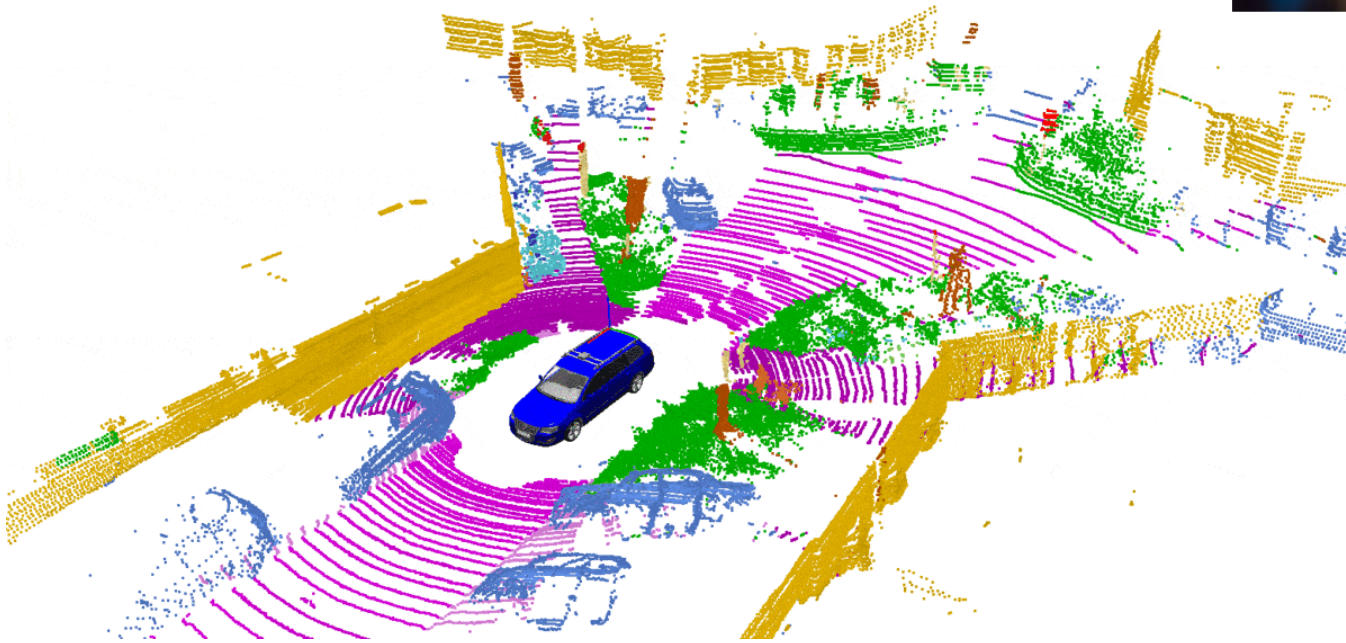
T3. Internet & Security

Related subjects



Multimedia

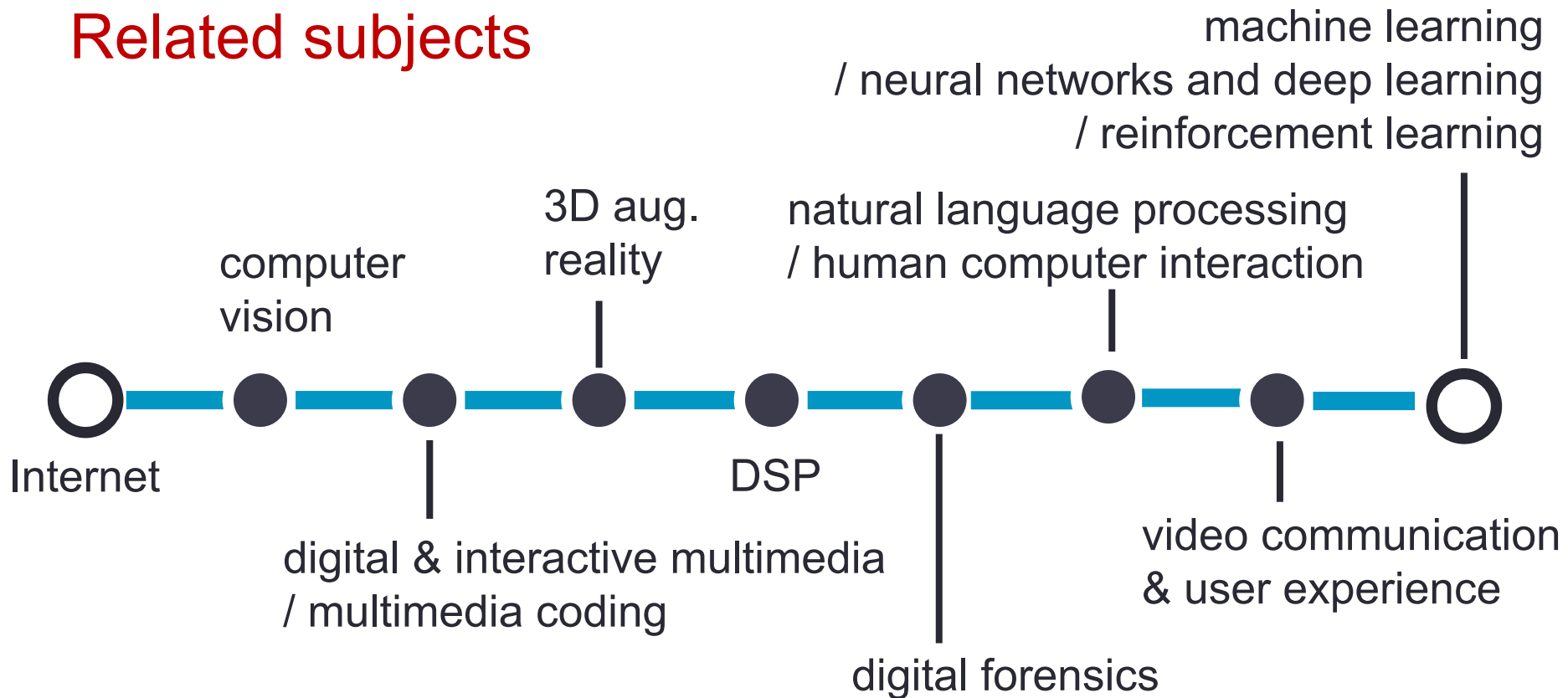
virtual/augmented reality



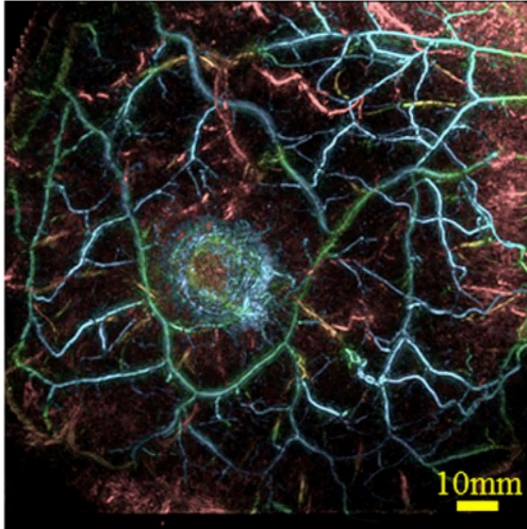
point clouds from a vehicular lidar, automatic video segmentation, ...

T4. Multimedia & digital arts

Related subjects

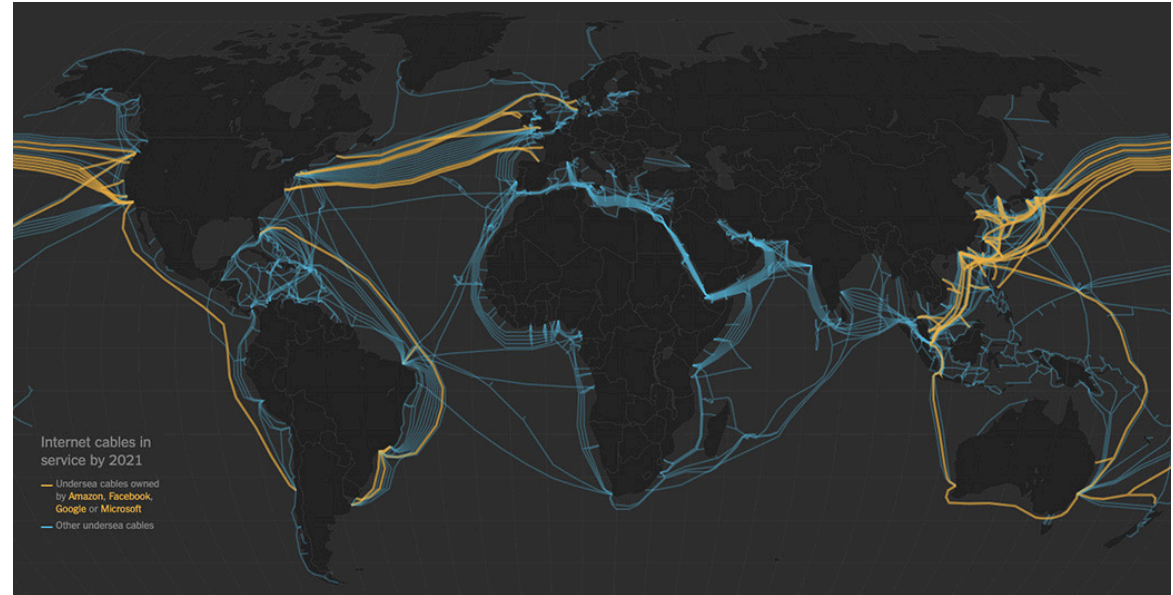


Photonics

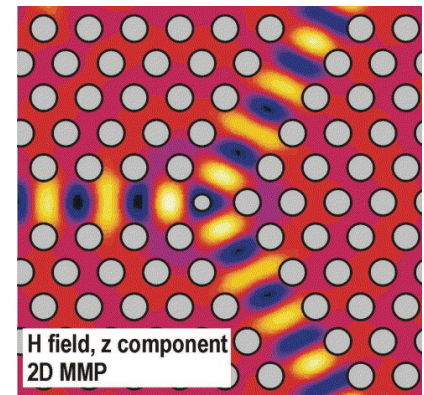
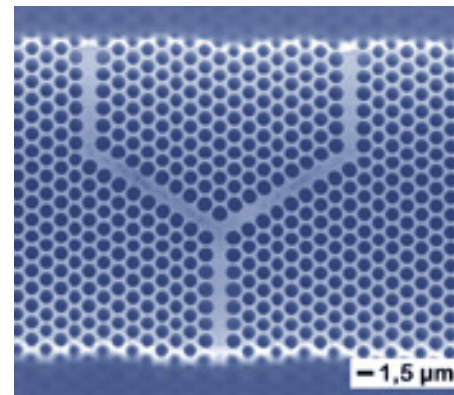


Biophotonics for
imaging and sensing

Nanophotonics and
metamaterials enable
light engineering



2-billions of km of optical fiber guarantee
world-wide communication

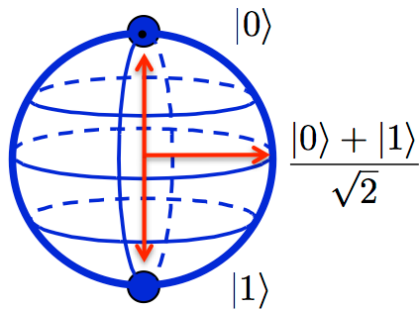


Quantum information

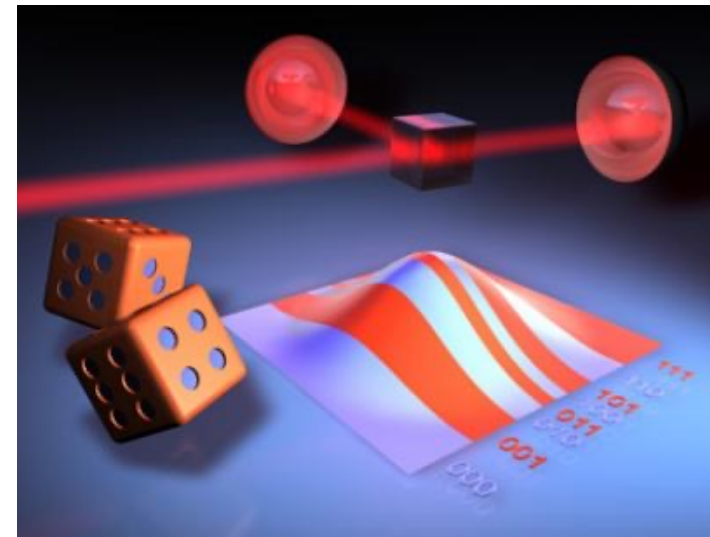
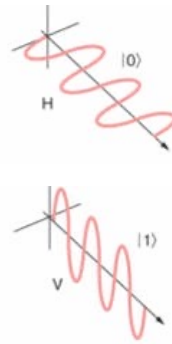
● 0

● 1

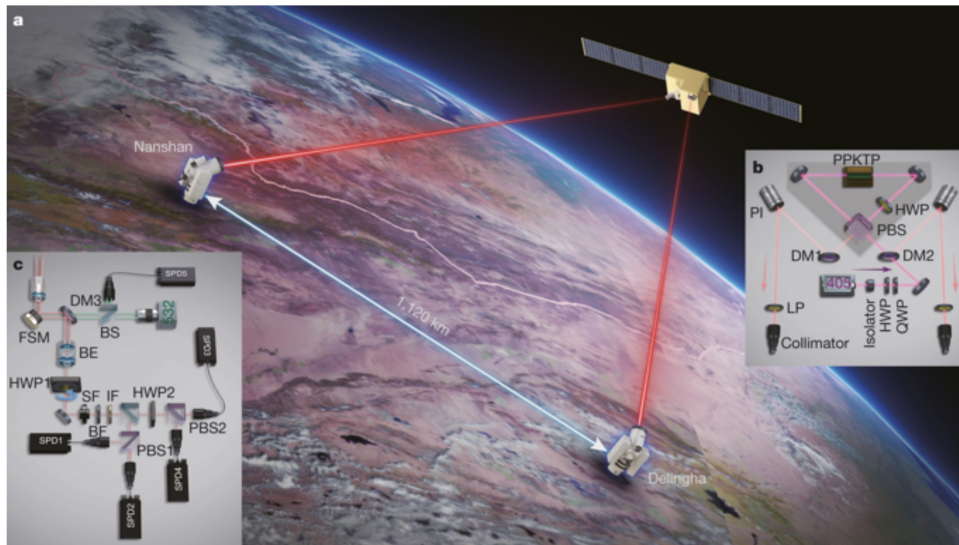
Classical bit



Qubit



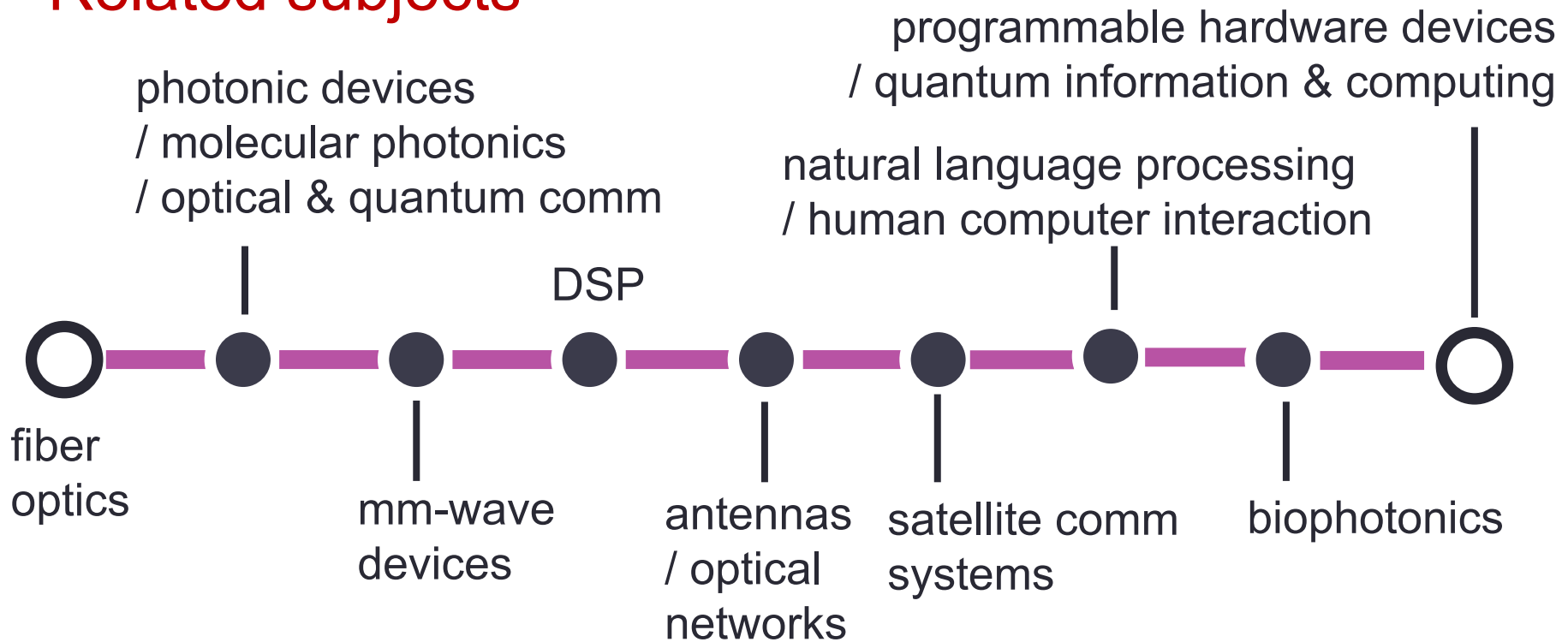
The perfect random number generator



Entangled states for secure communications

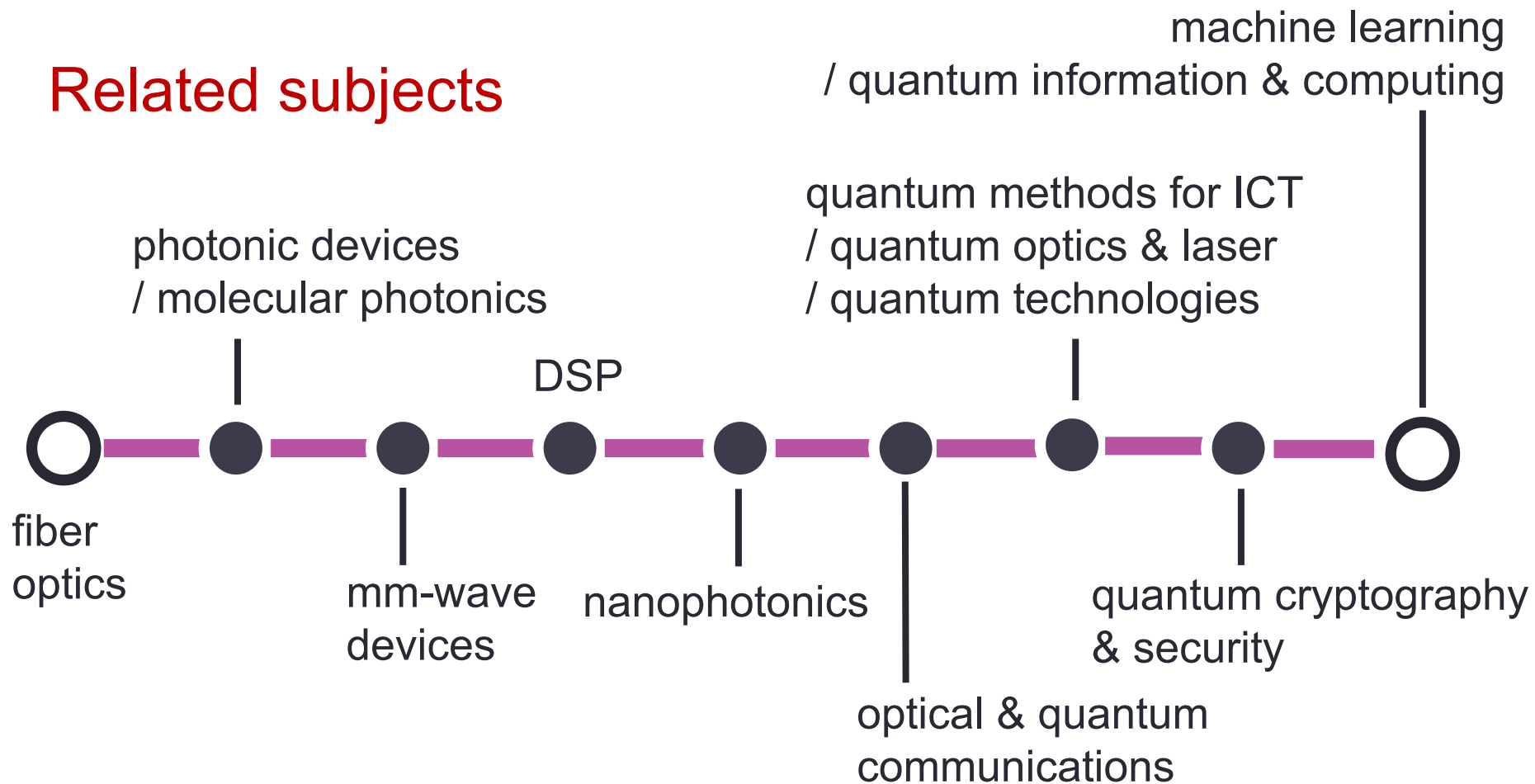
T5. Photonics

Related subjects



T6. Quantum information

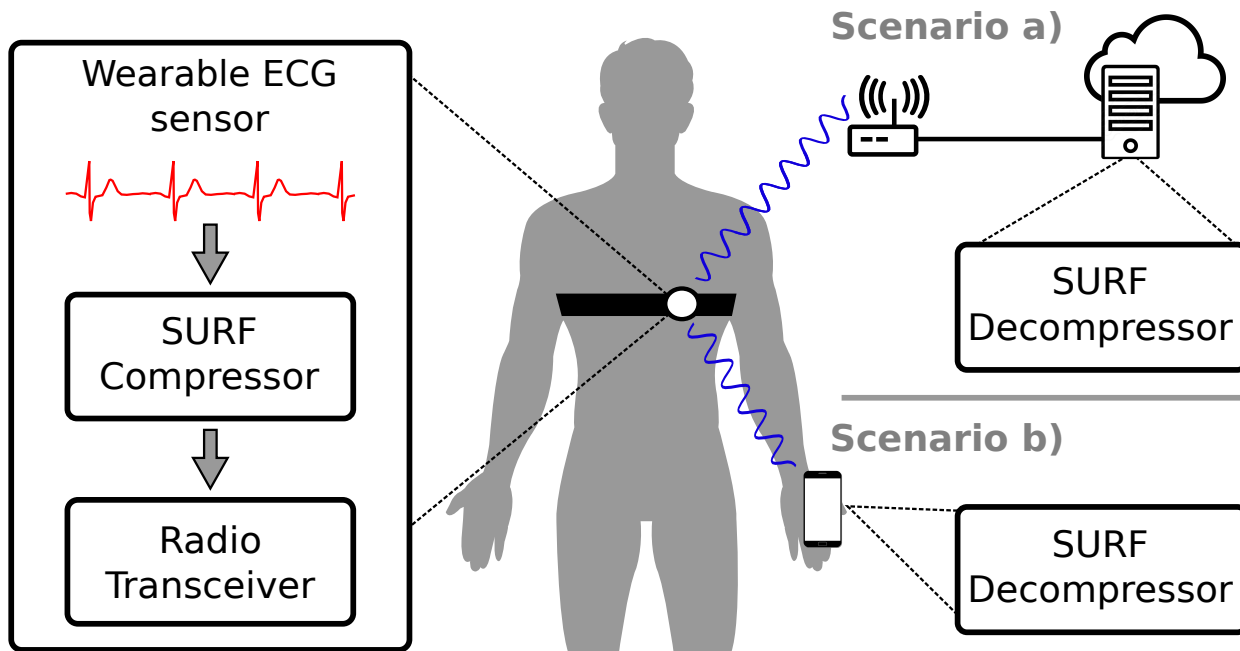
Related subjects



ICT for Life & health

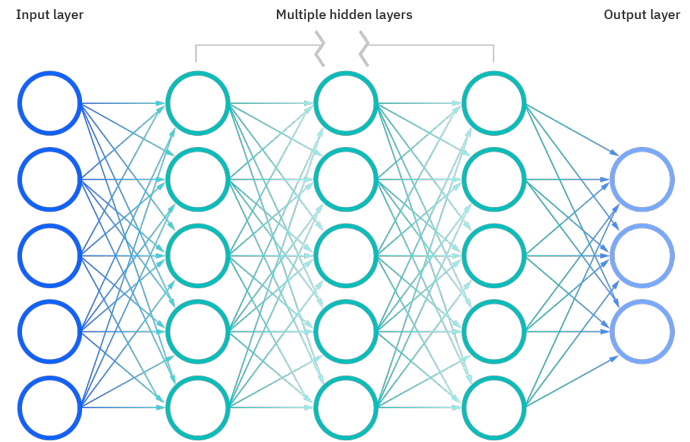
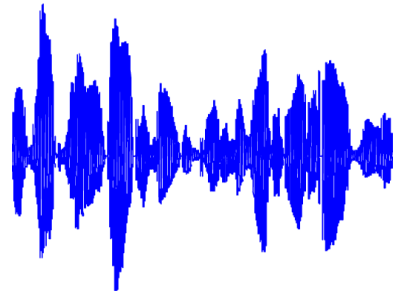
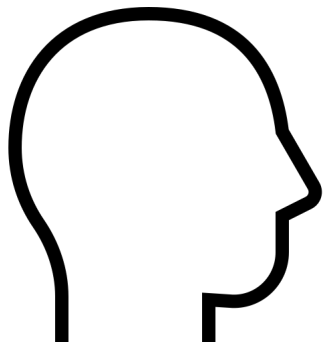


Realtime communication
for medical apps



Wearable technology, human data processing and transmission, ...

ICT for Life & health

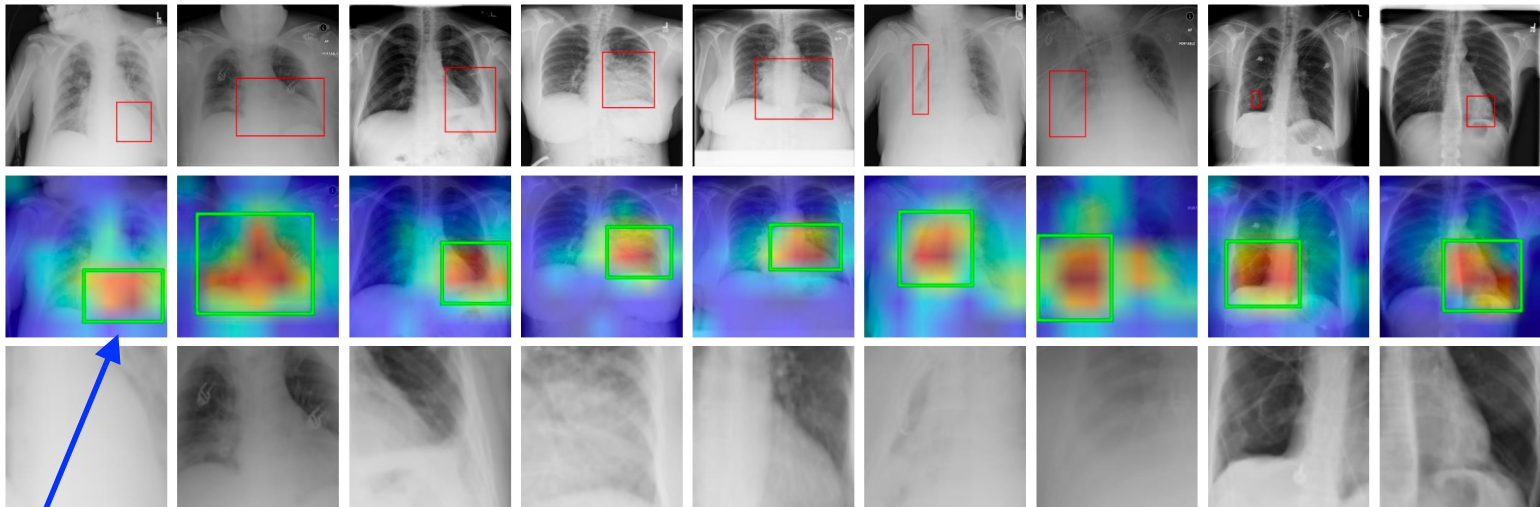


Speech feature extraction, speech recognition, natural language processing, ...

ICT for Life & health

Neural network technology for image processing

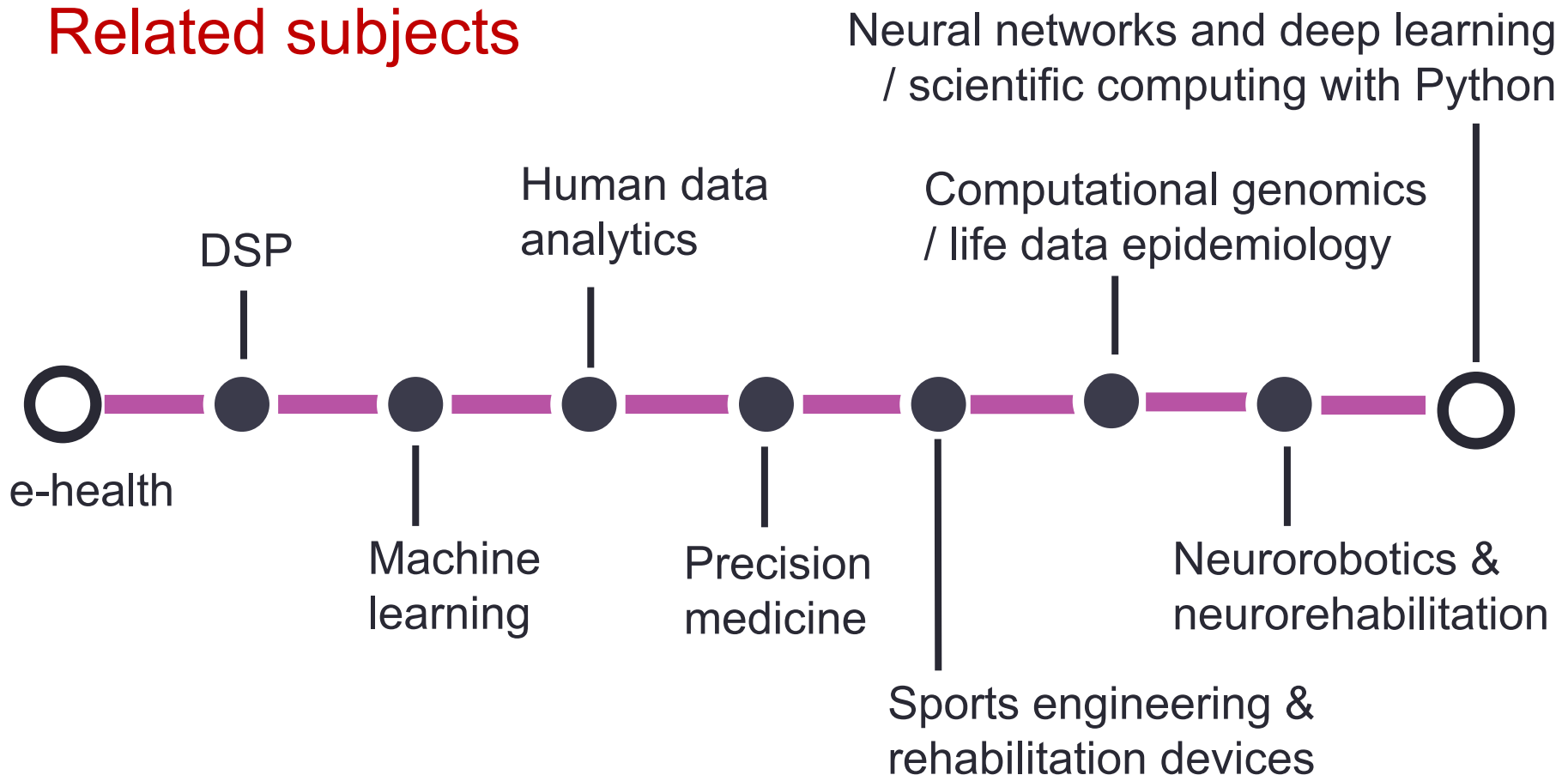
manually annotated



found by convolutional neural network

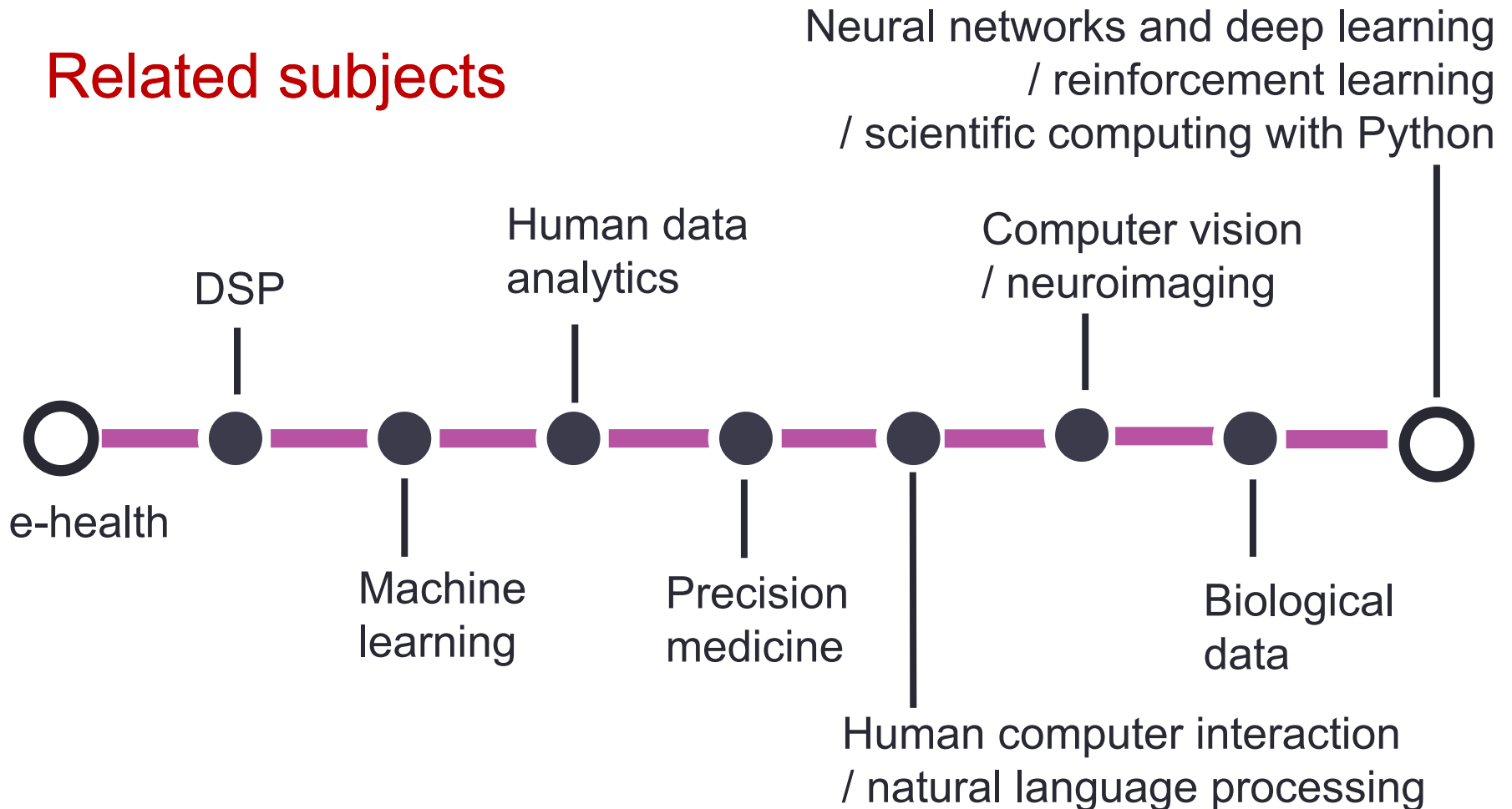
T7. Medical ICT

Related subjects



T8. Machine Learning for healthcare

Related subjects



Typical study plan – credit distribution

1st semester

18 curriculum-specific subjects

12 exams

2nd semester

exams **30**

3rd semester

24 exams

6 soft skills

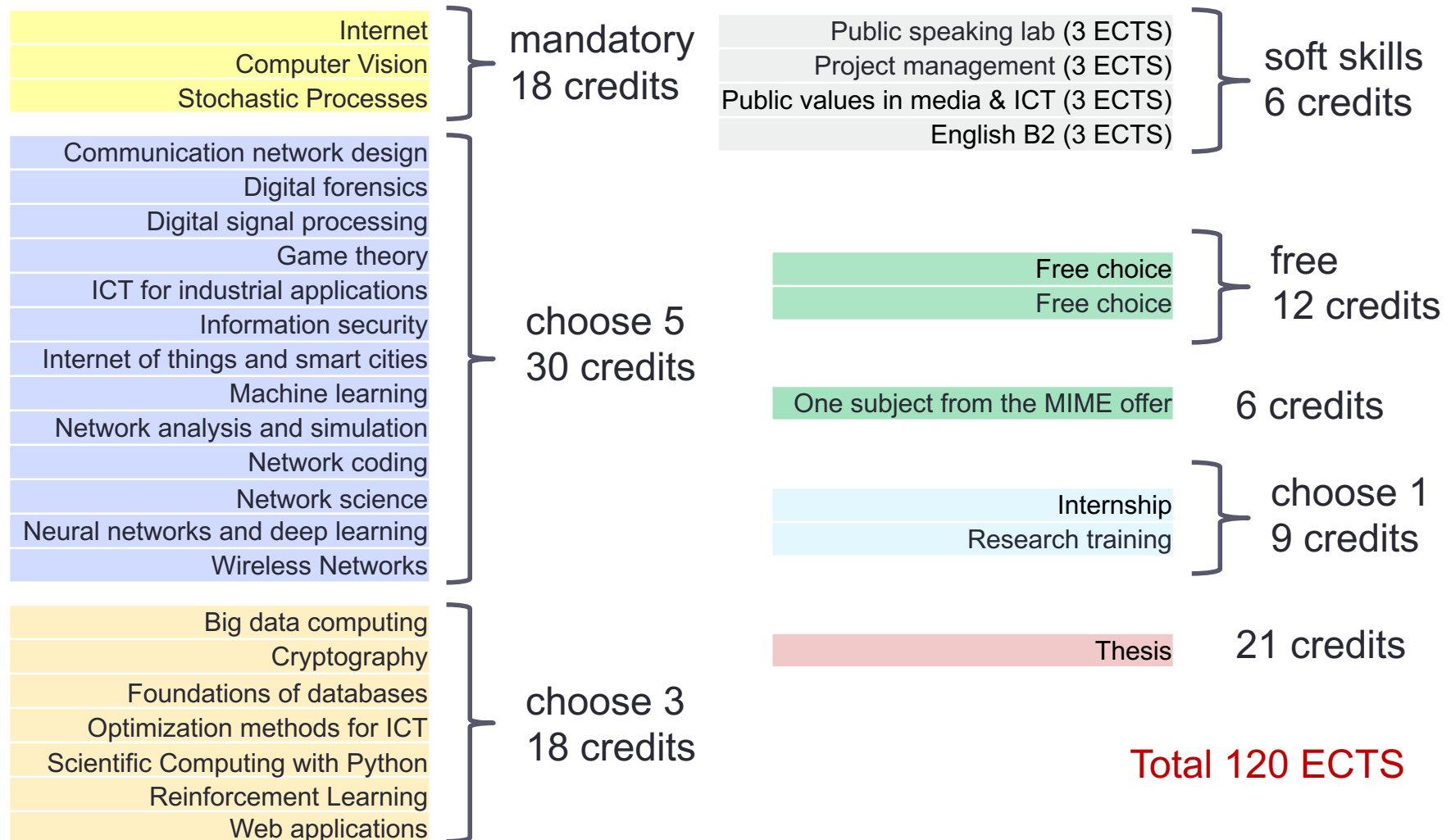
4th semester

internship or research training **9**

MS thesis **21**

Erasmus

Example: T.2 Internet & Security track



MIME

INTERNSHIPS

Communications

ARRI
MÜNCHEN (DE)

Signal processing
for digital cinema



Fiat Chrysler
Automobiles
TURIN / USA

5G vehicular
communications



Huawei
MILAN / CHINA

Cellular
networks R&D



Wind Tre
VENICE

National telco
operator



World Sensing
BARCELONA (ES)

Wireless sensors
monitoring



RFI
MESTRE (VE)

Railway
network



Telenor
OSLO (NO)

National telco
operator



CAME SpA
DOSSON DI CASIER
(TV)

Safe access

Gavia systems
ROVIGO

Public WiFi
services



Bft Spa
SCHIO (VI)

Domotic and
automation

Networks & multimedia

Sanmarco Informatica
GRISIGNANO DI
ZOCCO (VI)

IT Solutions



Teypra SRL
ROVIGO

IoT connected
devices



Sony Eutec
STUTT GART (DE)

Multimedia
R&D



Mida Solutions
PADOVA

Voice & data app
virtualization



Uqido
PADOVA

IoT / Blockchain
Software eng.



a Q U I F I

Aquifi
PALO ALTO (US)

3D vision

solidThinking®

solidThinking
VICENZA / USA

3D rendering

NOKIA Bell Labs

Nokia Bell Labs
DUBLIN (IR)

Low power
networking

alTran

Altran Italia
ROME

5G, video 3D,
cybersecurity

ATHONET

Athonet
BOLZANO VICENTINO
(VI)

Software defined
networking

Photonics

Leonardo
CARSOLI (AQ)

Thin films for
space optics



Qascom
BASSANO DEL
GRAPPA (VI)

Secure satellite
communications



DeltaOhm
PADOVA

Photo radiometric
sensors



CEIT
MONSELICE (PD) /
SVIZZERA

Fiber optical
networks



NTSG
ROMA

Fiber sensing
and monitoring



Calero Antenne
ISOLA VICENTINA (VI)

Antennas for 5G
and automotive



Infineon
PADOVA / AUSTRIA

Semiconductors
and IoT



Adant
PADOVA

Reconfigurable
antennas



SIT
PADOVA

Measurement
for safety



Nidek Medical
ALBIGNASEGO (PD)
/ GIAPPONE

Optometrical
instrumentation

ICT for healthcare

Malvestio

VILLANOVA DI
CAMPOSAMPIERO (PD)

Sensors for
hospital bed



Khymeia

NOVENTA PADOVANA
(PD)

Virtual reality for
neurorehab



Policlinico

Sant'Orsola
BOLOGNA

Infectious
diseases unit



BrainTrends

ROMA

Brain biosignal
sensing



Phoenix RTO

PADOVA

Hyperspectral
for agrifood



AMPED
TRIESTE

Forensics
multimedia



NIDEK MEDICAL

Nidek Medical
ALBIGNASEGO (PD) /
GIAPPONE

Ophtalmology
ocular diagnosis



UNIVERSITÄTS
KLINIKUM
TÜBINGEN

 Wyss Zurich
Translating
Science into Life

WYSS Center
ZURICH (CH)

FMRI-BCI analysis,
Neuroprosthetics



Inst. Tecnológico
de Canarias
CANARY ISLANDS (E)

CAD for bone
reconstruction

MIME

**INTERNATIONAL BY
DESIGN**

environment, mobility programs, ...

A truly multicultural environment



english as first and only language,
240 international students accepted from 30 countries
international students, mobility programs

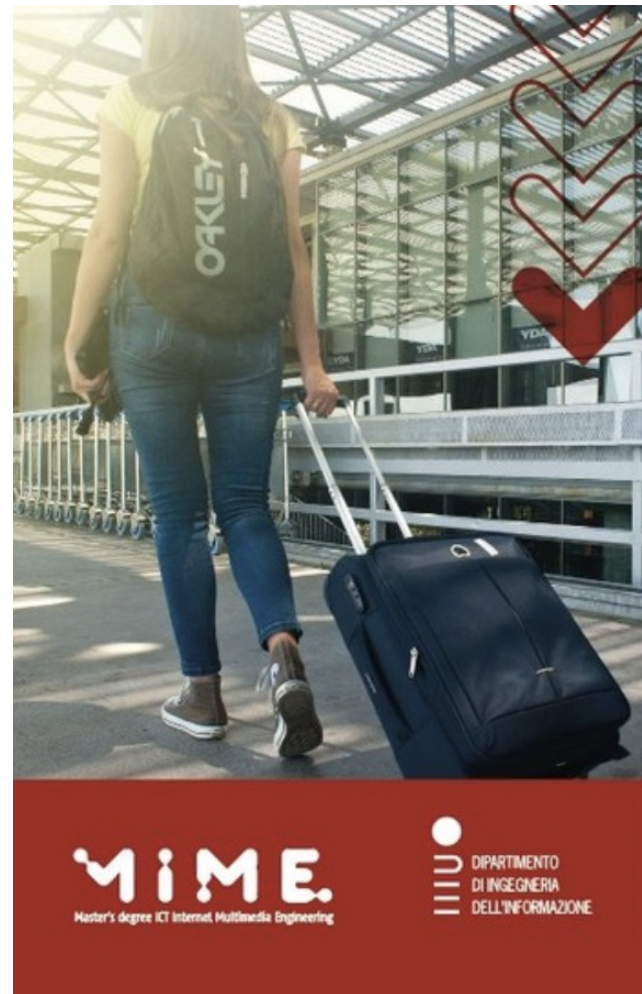
A truly multicultural environment



Afghanistan	2	China	3	Ghana	1	Kenya	2	Philippines	1	Tunisia	7
Albania	1	Colombia	1	India	8	Mexico	1	Russia	4	Turkey	85
Bangladesh	1	Eritrea	5	Indonesia	4	Nigeria	11	Serbia	4	Uganda	1
Bosnia and Herzegovina	3	Ethiopia	1	Iran	72	Pakistan	2	Sudan	2	Ukraine	3
Brazil	1	The Gambia	4	Kazakhstan	5	Peru	1	Syria	1	Uzbekistan	2

Mobility programs

- You have many options!
- You can choose among
 - Erasmus+ to study in EU countries
 - Ulisse program to study in Europe, America, Asia and Oceania
 - DECAMP virtual mobility as a partnership of European universities
 - Double Degree programs with Universidad Politécnica de Madrid and National Taiwan University



MIME

STATISTICS

occupation perspective, satisfaction, ...

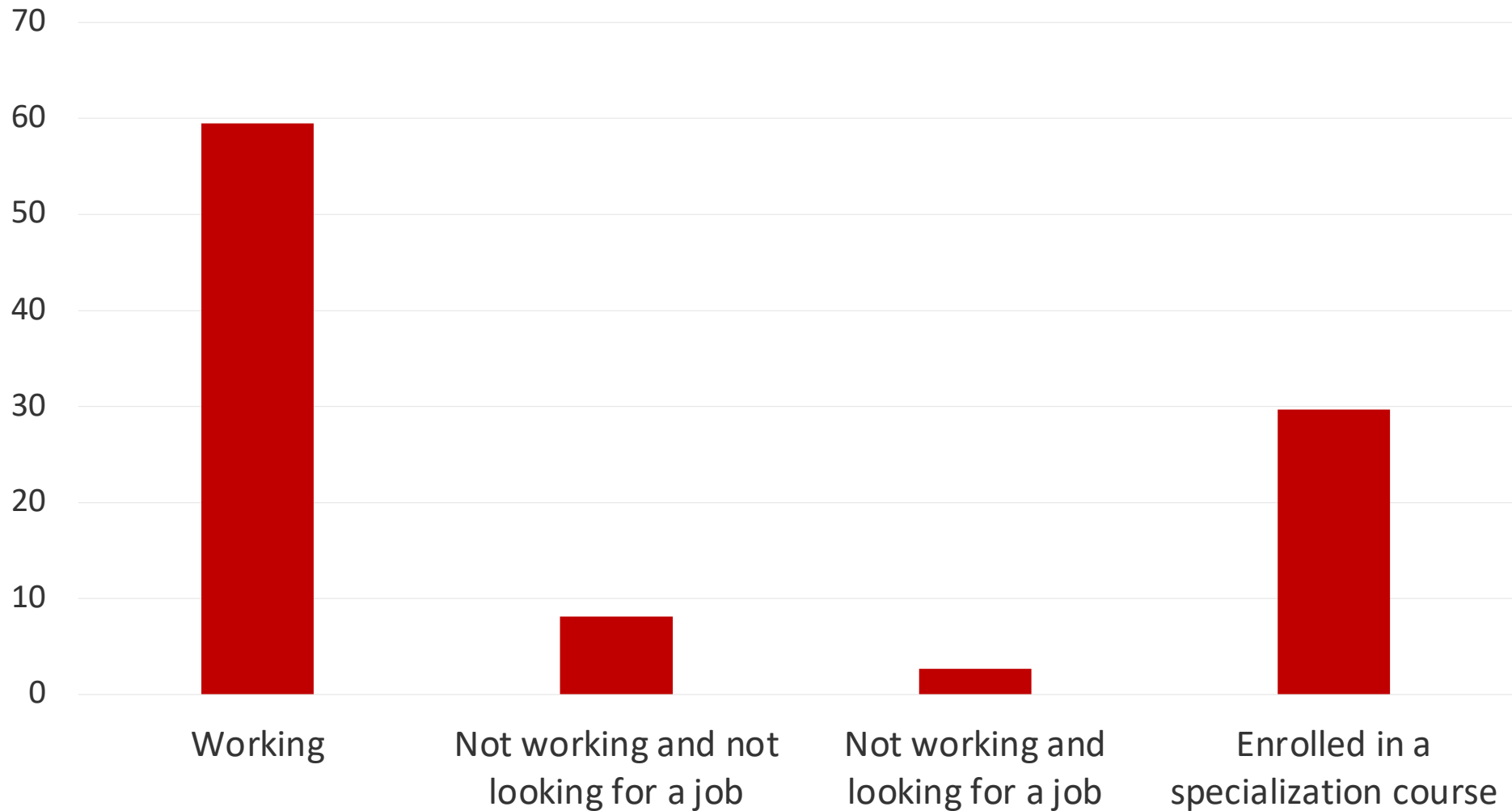
Some numbers from AlmaLaurea

- Monthly salary after 1 year: 1660 euros
- Average duration of studies: 2.2 years
- Average graduation mark: 109.7
- Average age at graduation: 25.1
- Average time from graduation to 1st job: 1 month
- Had an experience abroad: 39.1%
- Got a scholarship: 30%

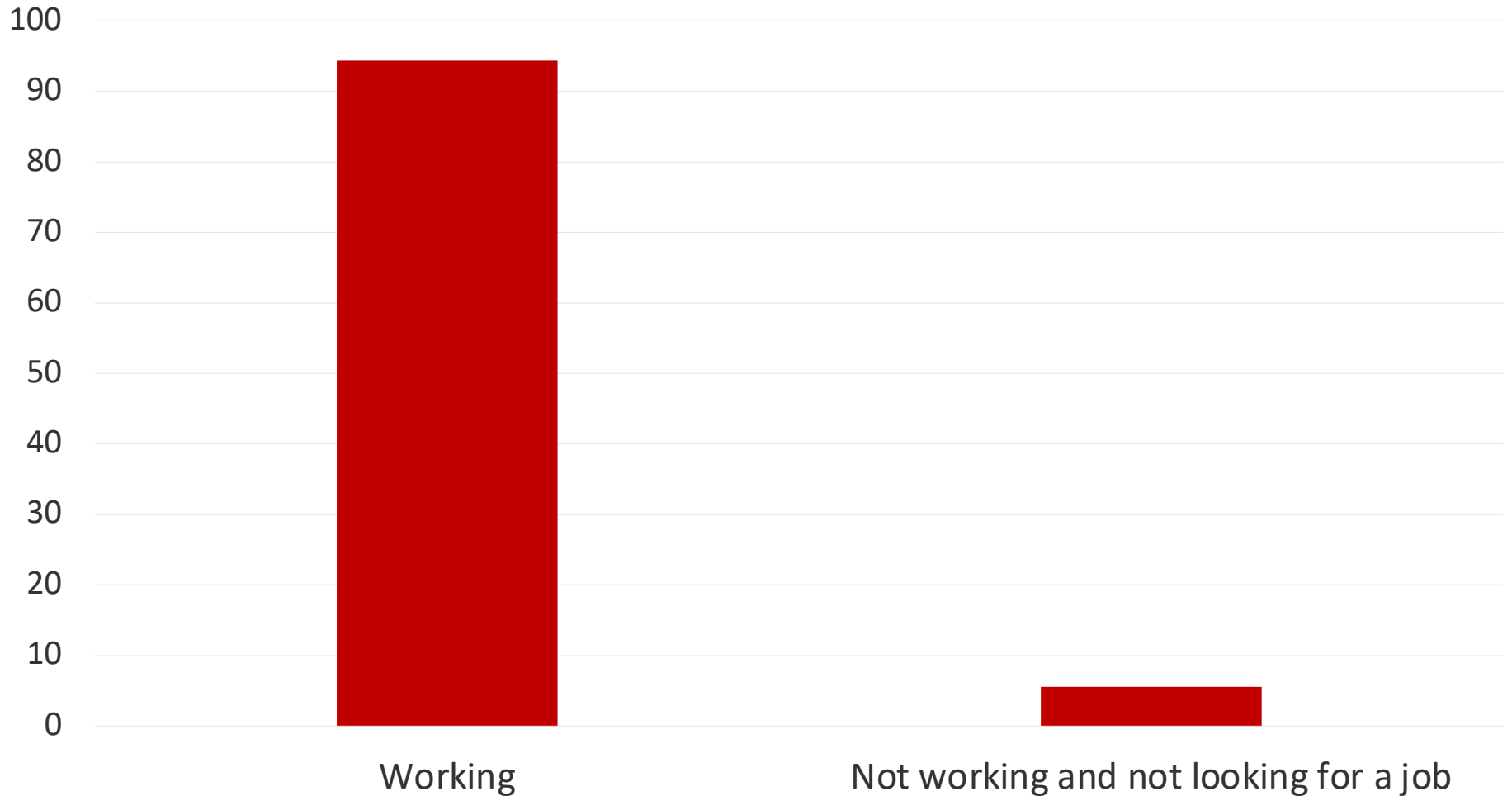


source: XXIII survey

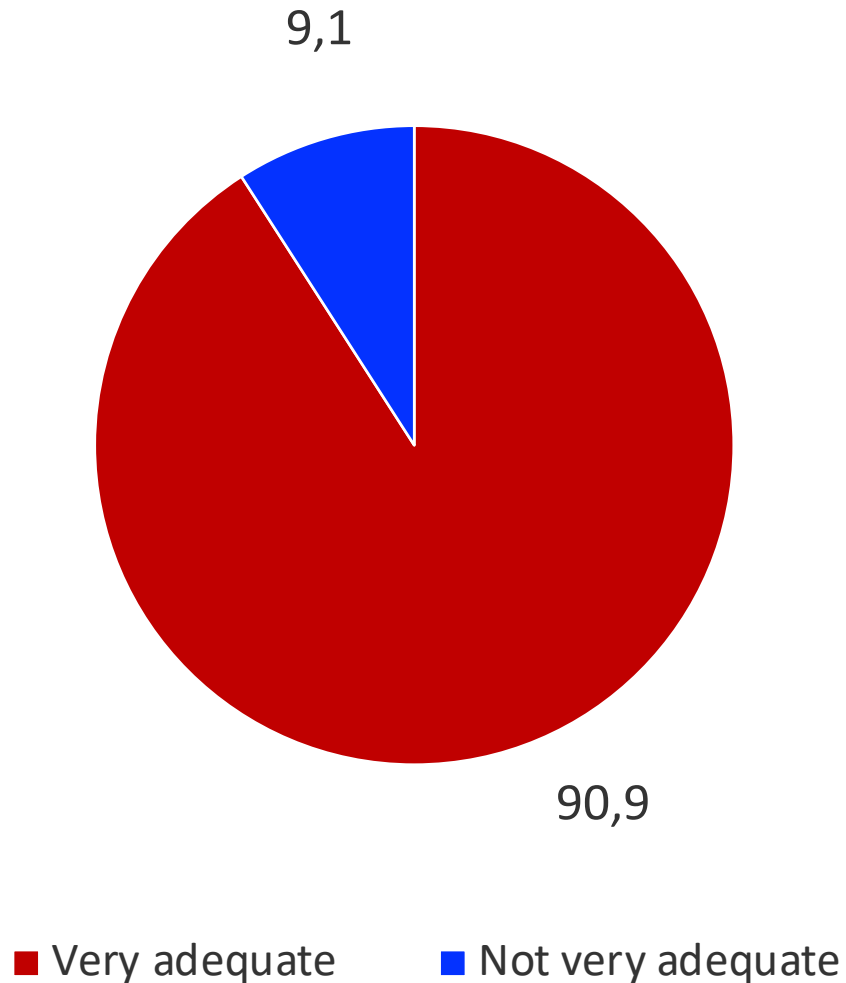
Employment status after 1 year (%)



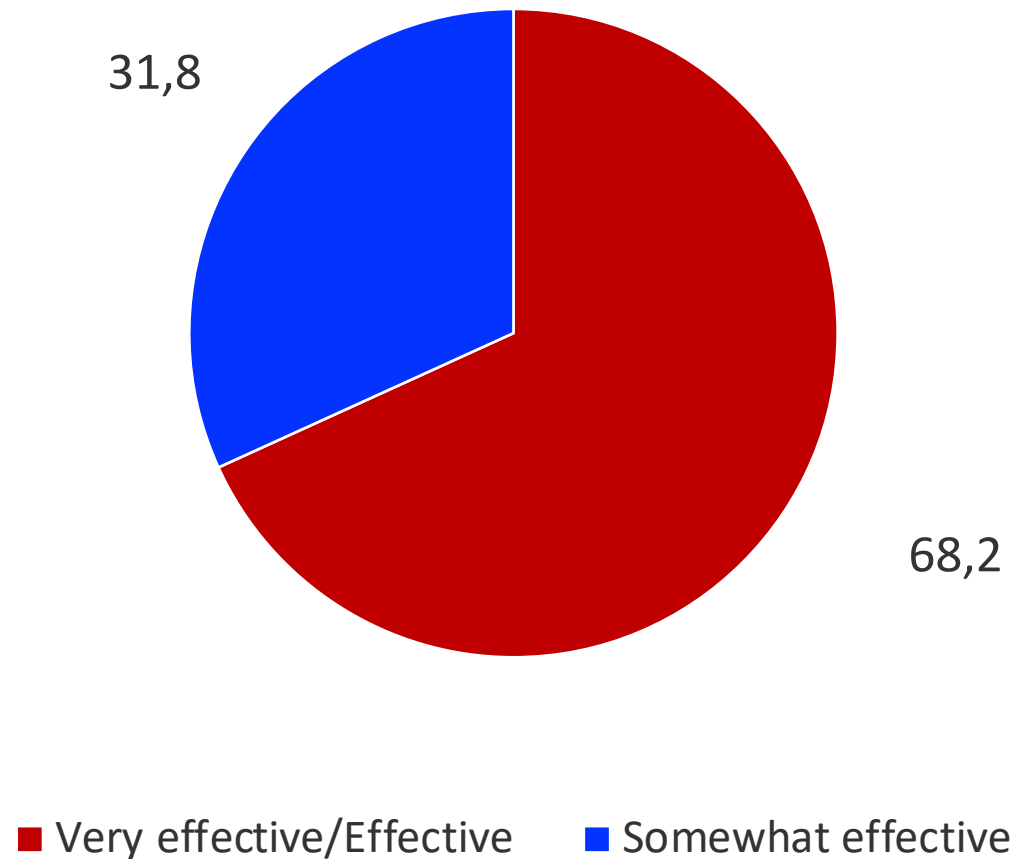
Employment status after 5 years (%)



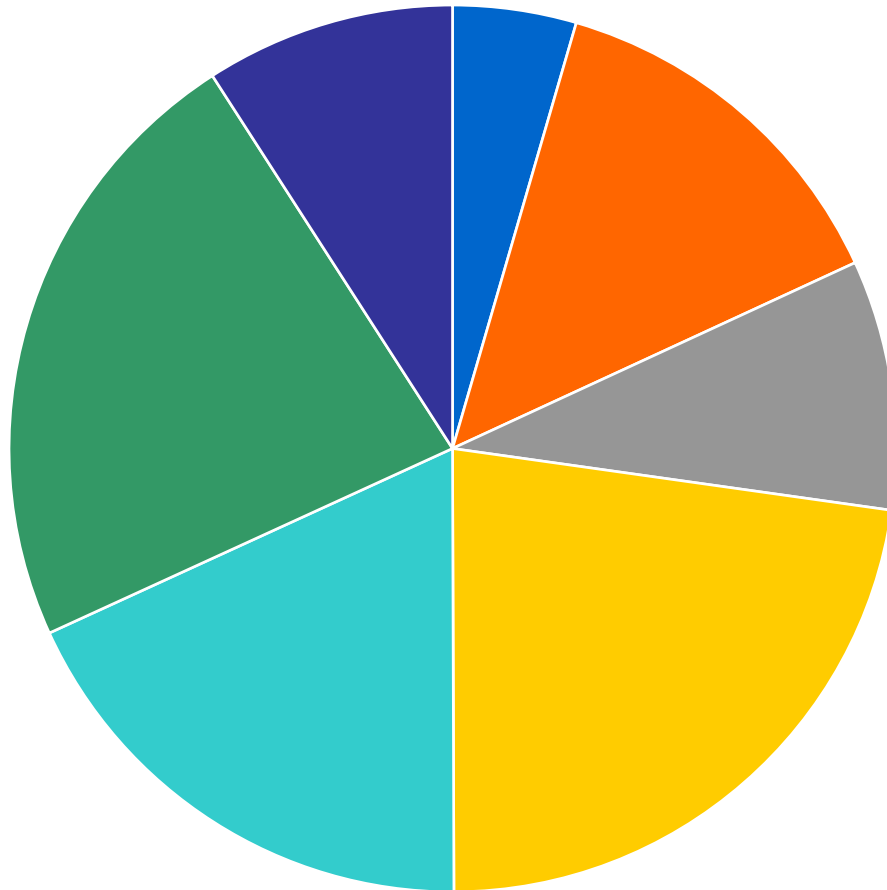
Adequacy of professional training (%)



Effectiveness of the degree in the actual job (%)

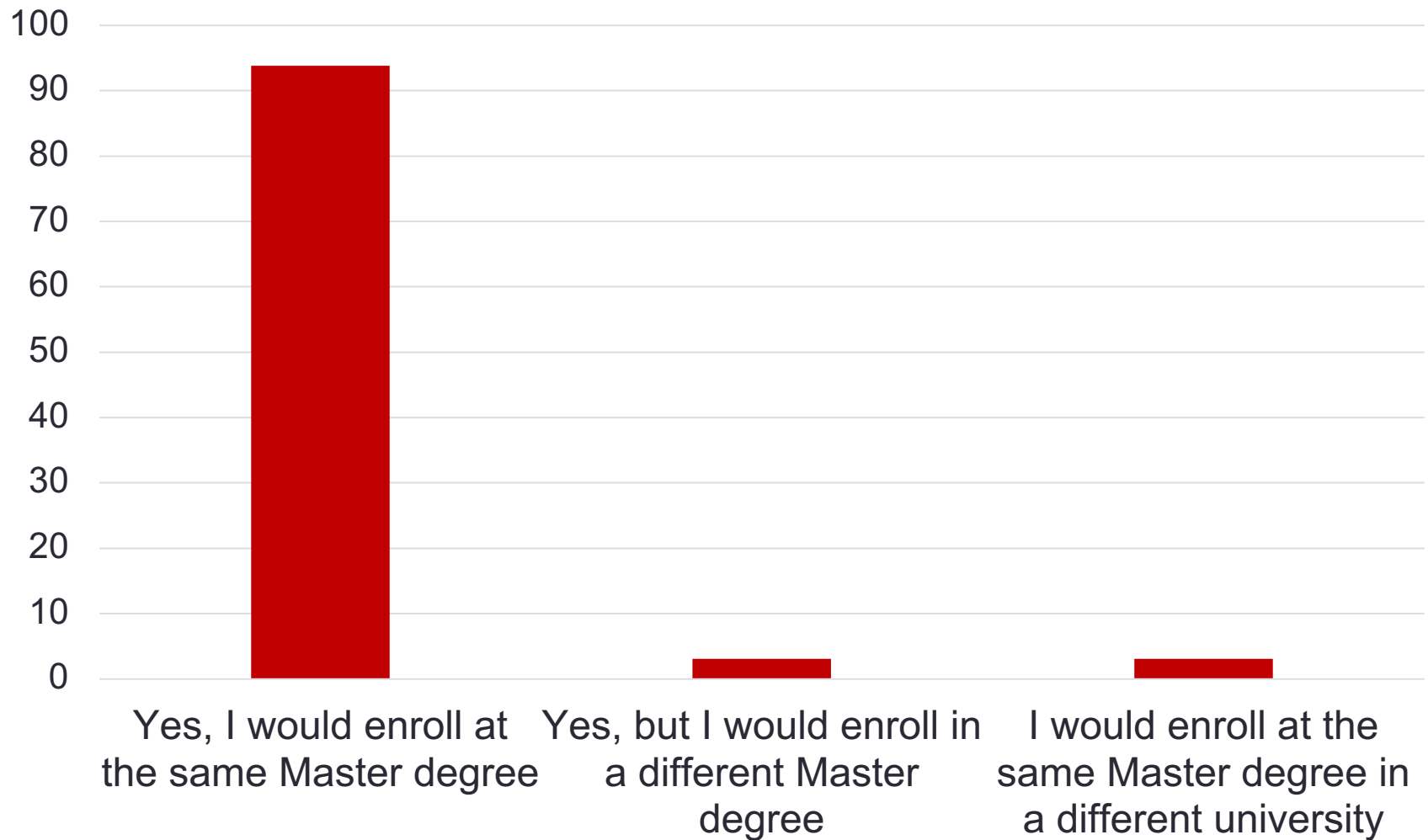


Employment fields (%)



- Agriculture
- Metal and precision engineering
- Other manufacturing
- Telecommunications
- Consulting
- Information technology
- Education and research

Would you choose it again?



MIME

ADMISSION PROCEDURE

Admission

- Holders of Italian degree $\geq 84/110$ with at least 50 ECTS credits in:
 - maths (MAT/02, MAT/03, MAT/05, MAT/06)
 - physics (FIS/01)
 - computer science (INF/01, ING-INF/05)
 - telecommunications (ING-INF/02, ING-INF/03)

Direct access for graduates with a Bachelor degree in Information Engineering, Maths, Physics, Computer Science

Admission

- If you are an International student and you do not hold an Italian degree, you will be evaluated by an Admission Committee to verify that an equivalent criterion applies
- Depending on the country, this translates into different minimum entry requirements on CGPA or percentage
- Two calls per year: typically one open from November to February and one from March to May (September for EU students)
- Check out <https://mime.dei.unipd.it/applications/> for further details

MIME

FURTHER INFO & CONTACTS

mime@dei.unipd.it



1222-2022
800 ANNI



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DI PADOVA

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DI INGEGNERIA
DELL'INFORMAZIONE

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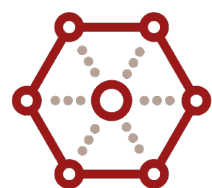
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