
• Lundi 17 décembre

9h30-10h	Sylvie Piumi	Accueil (<i>accueil</i>)
10h-11h30	Emmanuel Guigon	Des robots et des hommes (<i>salle H20</i>)
11h30-12h30	Mohamed Fnadi	Cartographie, localisation et navigation (<i>salle stagiaire</i>)
14h-16h	Ludovic Saint-Bauzel	Initiation à python (<i>salle stagiaire</i>)
16h-17h	Stéphane Doncieux	Présentation de l'ISIR (<i>salle H20</i>)

• Mardi 18 décembre

9h30-12h30	Laurent Fabre	Initiation à la CAO, fabrication, usinage (<i>salle stagiaire</i>) Groupes 1&2 : 9h30-11h — Groupes 3&4 : 11h-12h30 en alternance avec Fil rouge (<i>salle stagiaire</i>) Groupes 3&4 : 9h30-11h — Groupes 1&2 : 11h-12h30
14h-15h30	Gilles Bailly	Interaction homme-machine (<i>salle stagiaire</i>) 4 : 14h-14h30 — 4 : 14h30-15h00 — 5 : 15h00-15h30 en alternance avec Fil rouge (<i>salle stagiaire</i>)
15h30-17h	Marie-Aude Vitrani	Des robots pour la chirurgie (<i>salle stagiaire</i>)

• Mercredi 19 décembre

9h30-10h30	Nicolas Bredeche	Robotique collective sur Thymios (<i>salle 306</i>)
10h30-12h30	Eléonore Ferrier-Barbut par groupe de 2	Suivi du regard en chirurgie (<i>salle SIMA</i>) en alternance avec Fil rouge (<i>salle stagiaire</i>)
14h-15h	Mohamed Chetouani	Robotique & Education (<i>salle stagiaire</i>)
15h-17h	Octavia Veny	Carnot (25-26 <i>salle 101</i>)

[illegible]

on intermediate axes and **edge** (same diagram),

[illegible]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Crataegus, Agave, Commersonia, Crotalaria, (same set)

Shape 1 : 2150 points Shape 2 : points 111

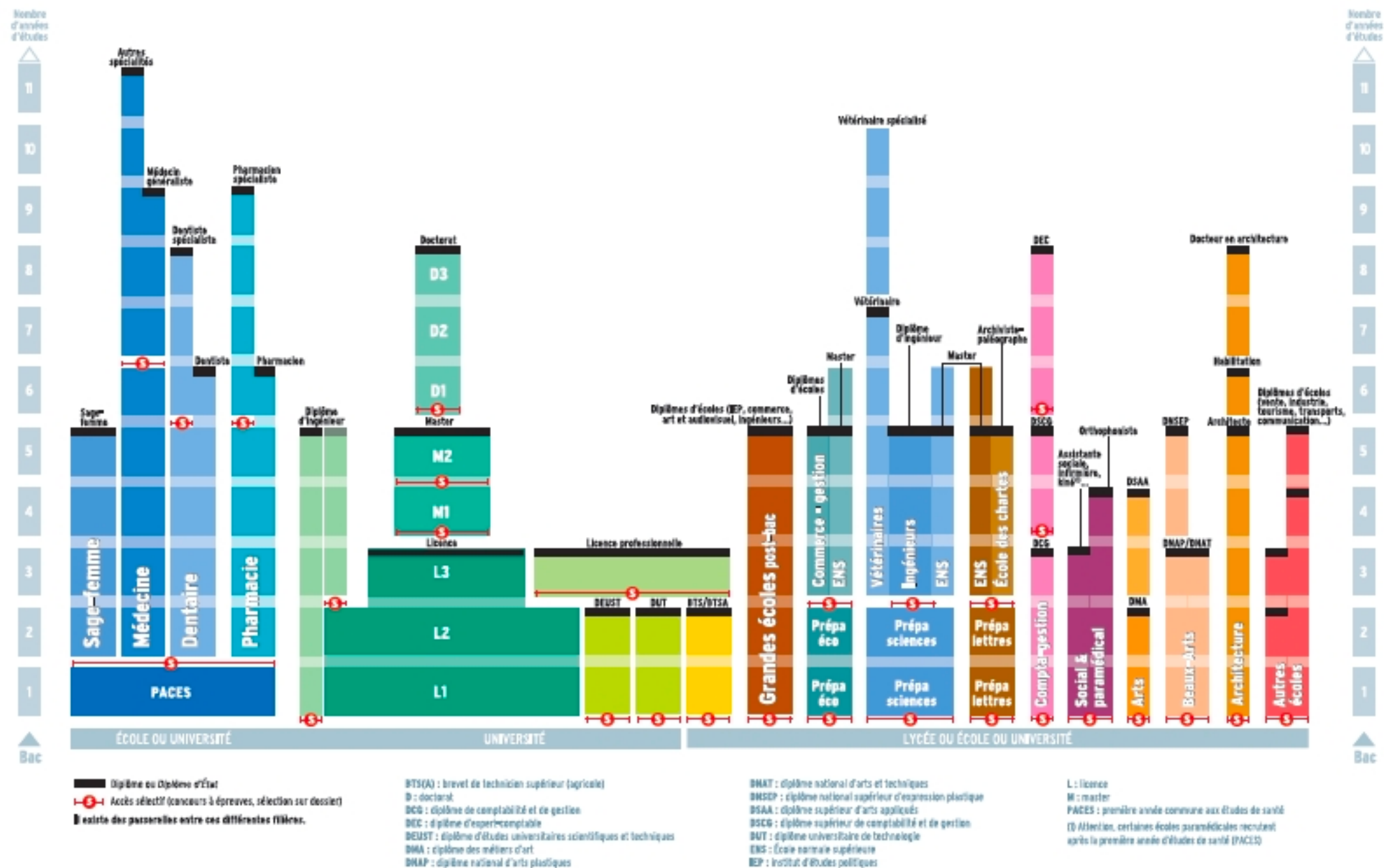
1175 11850

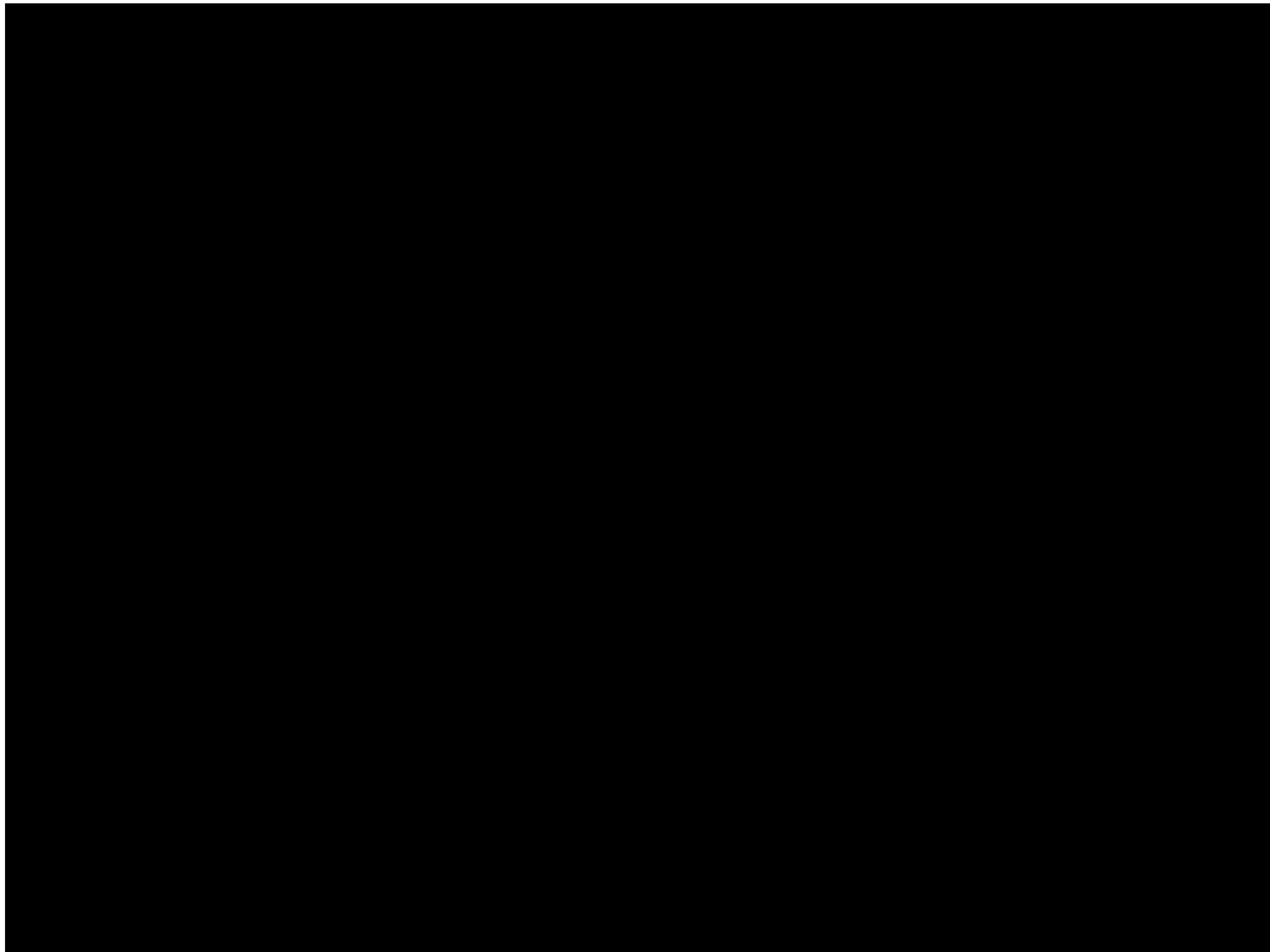
$$\frac{1}{1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} + \frac{1}{16} - \frac{1}{32} + \frac{1}{64} - \frac{1}{128} + \frac{1}{256} - \frac{1}{512} + \frac{1}{1024} - \frac{1}{2048} + \frac{1}{4096} - \frac{1}{8192} + \frac{1}{16384} - \frac{1}{32768} + \frac{1}{65536} - \frac{1}{131072} + \frac{1}{262144} - \frac{1}{524288} + \frac{1}{1048576} - \frac{1}{2097152} + \frac{1}{4194304} - \frac{1}{8388608} + \frac{1}{16777216} - \frac{1}{33554432} + \frac{1}{67108864} - \frac{1}{134217728} + \frac{1}{268435456} - \frac{1}{536870912} + \frac{1}{1073741824} - \frac{1}{2147483648} + \frac{1}{4294967296} - \frac{1}{8589934592} + \frac{1}{17179869184} - \frac{1}{34359738368} + \frac{1}{68719476736} - \frac{1}{137438953472} + \frac{1}{274877906944} - \frac{1}{549755813888} + \frac{1}{1099511627776} - \frac{1}{2199023255552} + \frac{1}{4398046511104} - \frac{1}{8796093022208} + \frac{1}{17592186044416} - \frac{1}{35184372088832} + \frac{1}{70368744177664} - \frac{1}{140737488355328} + \frac{1}{281474976710656} - \frac{1}{562949953421312} + \frac{1}{1125899906842624} - \frac{1}{2251799813685248} + \frac{1}{4503599627370496} - \frac{1}{9007199254740992} + \frac{1}{18014398509481984} - \frac{1}{36028797018963968} + \frac{1}{72057594037927936} - \frac{1}{144115188075855872} + \frac{1}{288230376151711744} - \frac{1}{576460752303423488} + \frac{1}{1152921504606846976} - \frac{1}{2305843009213693952} + \frac{1}{4611686018427387904} - \frac{1}{9223372036854775808} + \frac{1}{18446744073709551616} - \frac{1}{36893488147419103232} + \frac{1}{73786976294838206464} - \frac{1}{147573952589676412928} + \frac{1}{295147905179352825856} - \frac{1}{590295810358705651712} + \frac{1}{1180591620717411303424} - \frac{1}{2361183241434822606848} + \frac{1}{4722366482869645213696} - \frac{1}{9444732965739290427392} + \frac{1}{18889465931478580854784} - \frac{1}{37778931862957161709568} + \frac{1}{75557863725914323419136} - \frac{1}{151115727451828646838272} + \frac{1}{302231454903657293676544} - \frac{1}{604462909807314587353088} + \frac{1}{1208925819614629174706176} - \frac{1}{2417851639229258349412352} + \frac{1}{4835703278458516698824704} - \frac{1}{9671406556917033397649408} + \frac{1}{19342813113834066795298816} - \frac{1}{38685626227668133590597632} + \frac{1}{77371252455336267181195264} - \frac{1}{154742504910672534362390528} + \frac{1}{309485009821345068724781056} - \frac{1}{618970019642690137449562112} + \frac{1}{1237940039285380274899124224} - \frac{1}{2475880078570760549798248448} + \frac{1}{4951760157141521099596496896} - \frac{1}{9903520314283042199192993792} + \frac{1}{19807040628566084398385987584} - \frac{1}{39614081257132168796771975168} + \frac{1}{79228162514264337593543950336} - \frac{1}{158456325028528675187087900672} + \frac{1}{316912650057057350374175801344} - \frac{1}{633825300114114700748351602688} + \frac{1}{1267650600228229401496703205376} - \frac{1}{2535301200456458802993406410752} + \frac{1}{5070602400912917605986812821504} - \frac{1}{10141204801825835211973625643008} + \frac{1}{20282409603651670423947251286016} - \frac{1}{40564819207303340847894502572032} + \frac{1}{81129638414606681695789005144064} - \frac{1}{162259276829213363391578010288128} + \frac{1}{324518553658426726783156020576256} - \frac{1}{649037107316853453566312041152512} + \frac{1}{1298074214633706907132624082305024} - \frac{1}{2596148429267413814265248164610048} + \frac{1}{5192296858534827628530496329220096} - \frac{1}{10384593717069655257060992658440192} + \frac{1}{20769187434139310514121985316880384} - \frac{1}{41538374868278621028243970633760768} + \frac{1}{83076749736557242056487941267521536} - \frac{1}{166153499473114484112975882535043072} + \frac{1}{332306998946228968225951765070086144} - \frac{1}{664613997892457936451903530140172288} + \frac{1}{1329227995784915872903807060280344576} - \frac{1}{2658455991569831745807614120560689152} + \frac{1}{5316911983139663491615228241121378304} - \frac{1}{10633823966279326983230456482242756608} + \frac{1}{21267647932558653966460912964485513216} - \frac{1}{42535295865117307932921825928971026432} + \frac{1}{85070591730234615865843651857942052864} - \frac{1}{170141183460469231731687303715884105728} + \frac{1}{340282366920938463463374607431768211456} - \frac{1}{680564733841876926926749214863536422912} + \frac{1}{1361129467683753853853498429727072845824} - \frac{1}{2722258935367507707706996859454145691648} + \frac{1}{5444517870735015415413993718908291383296} - \frac{1}{10889035741470030830827987437816582766592} + \frac{1}{21778071482940061661655974875633165533184} - \frac{1}{43556142965880123323311949751266331066368} + \frac{1}{87112285931760246646623899502532662132736} - \frac{1}{174224571863520493293247799005065324265472} + \frac{1}{348449143727040986586495598010130648530944} - \frac{1}{696898287454081973172991196020261297061888} + \frac{1}{1393796574908163946345982392040522594123776} - \frac{1}{2787593149816327892691964784081045188247552} + \frac{1}{5575186$$



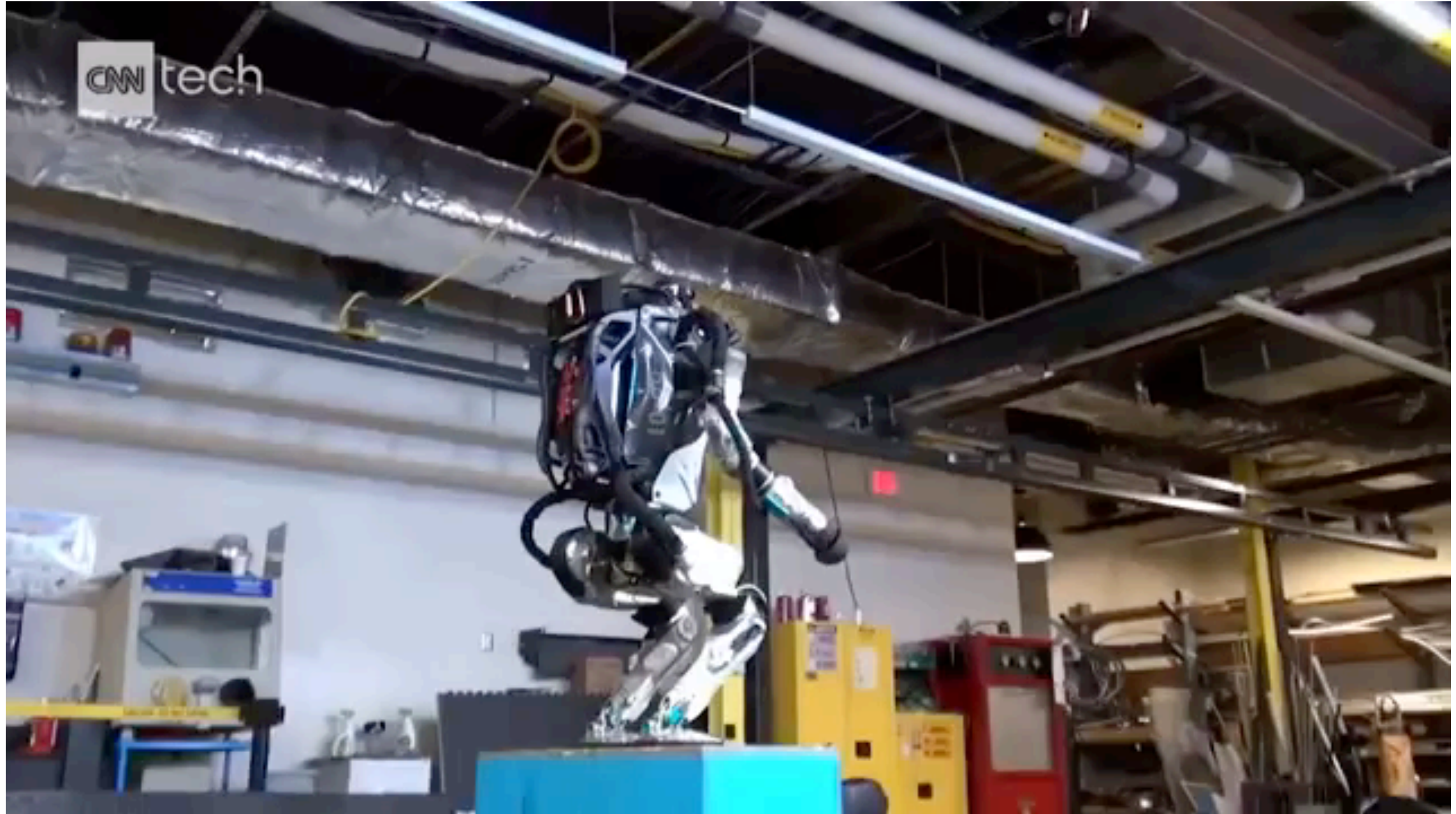
thymio







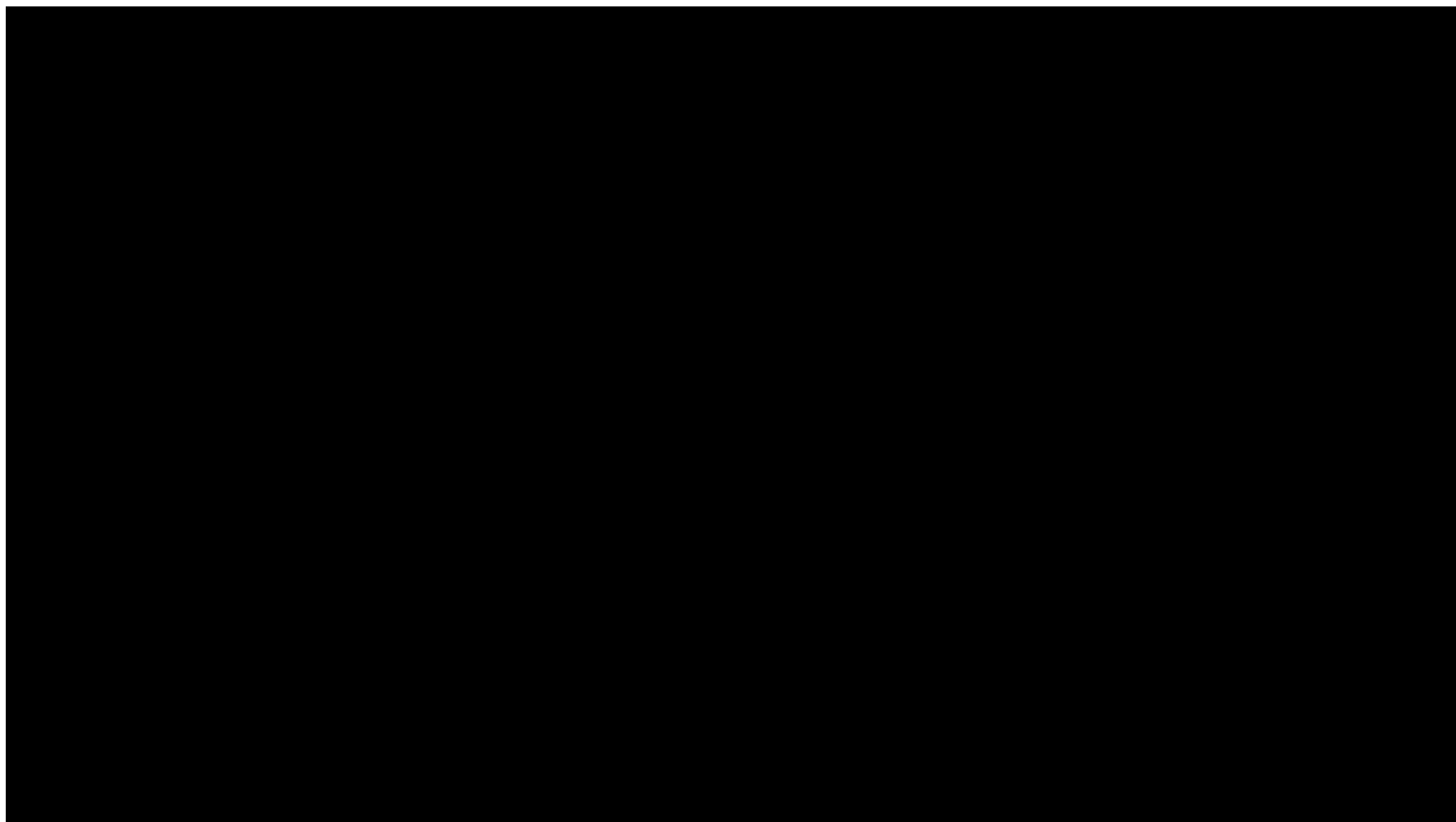
CNN tech

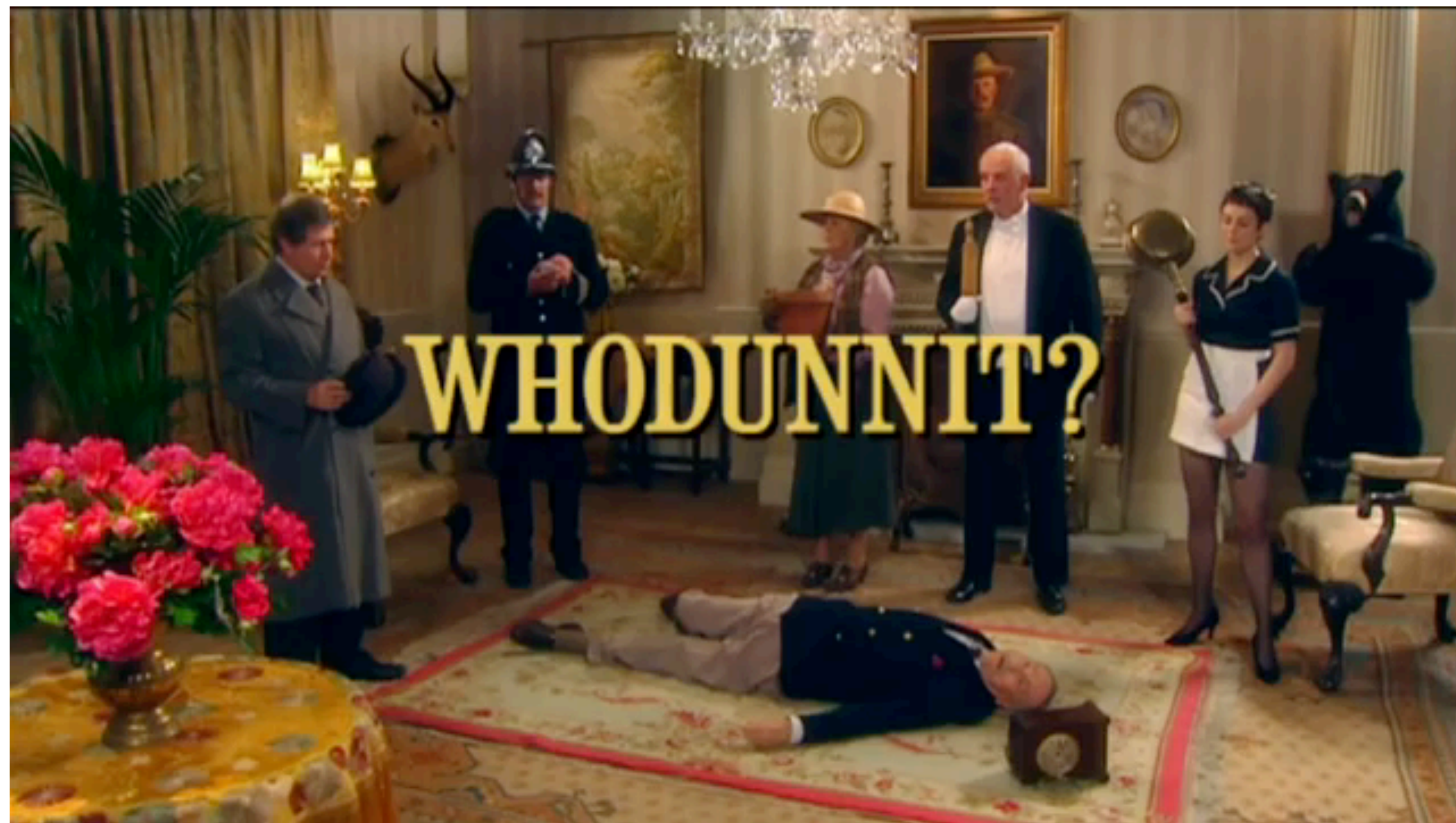


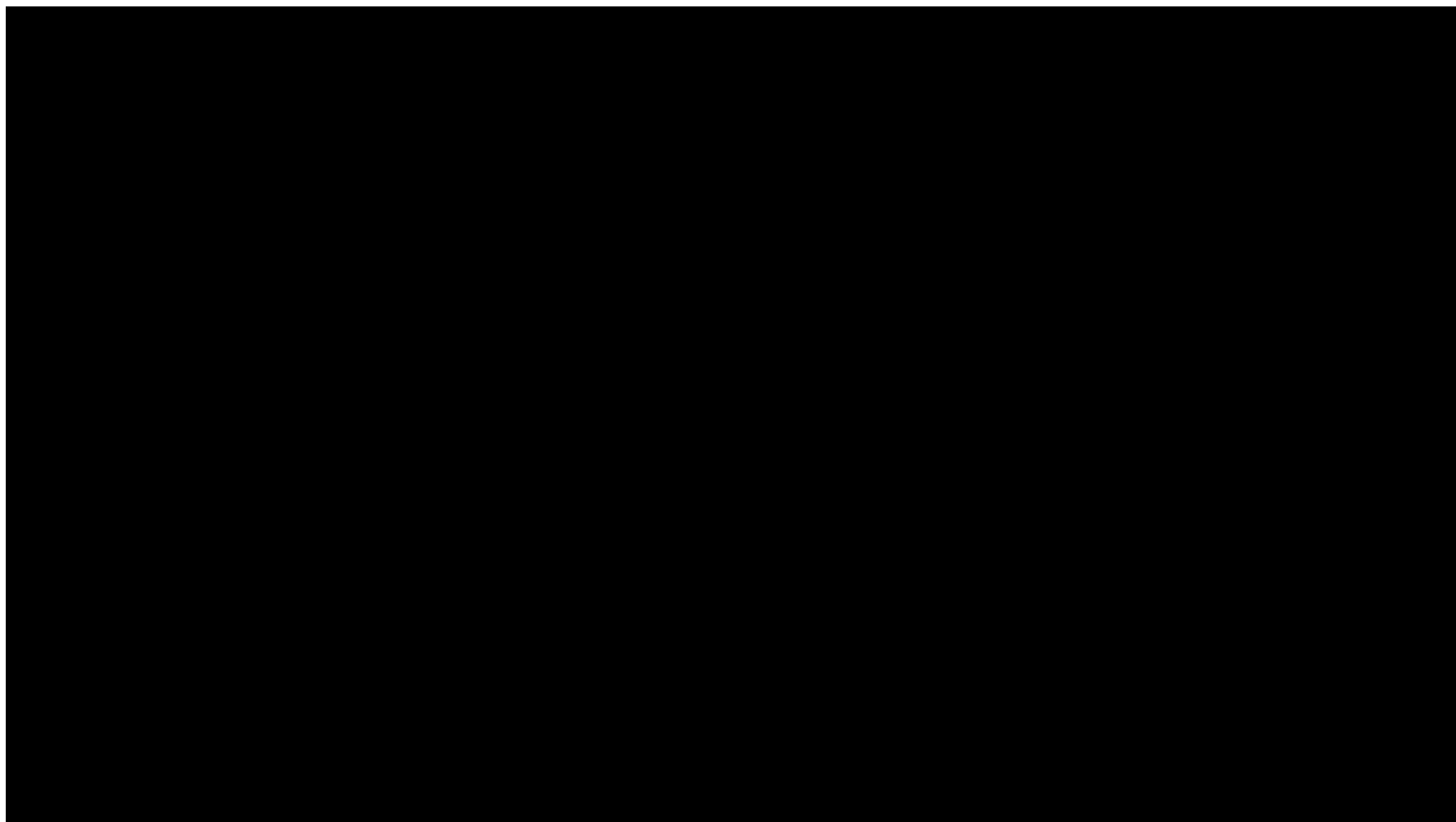
45:00 | RMA 0 - 0 GRA +1 00:33



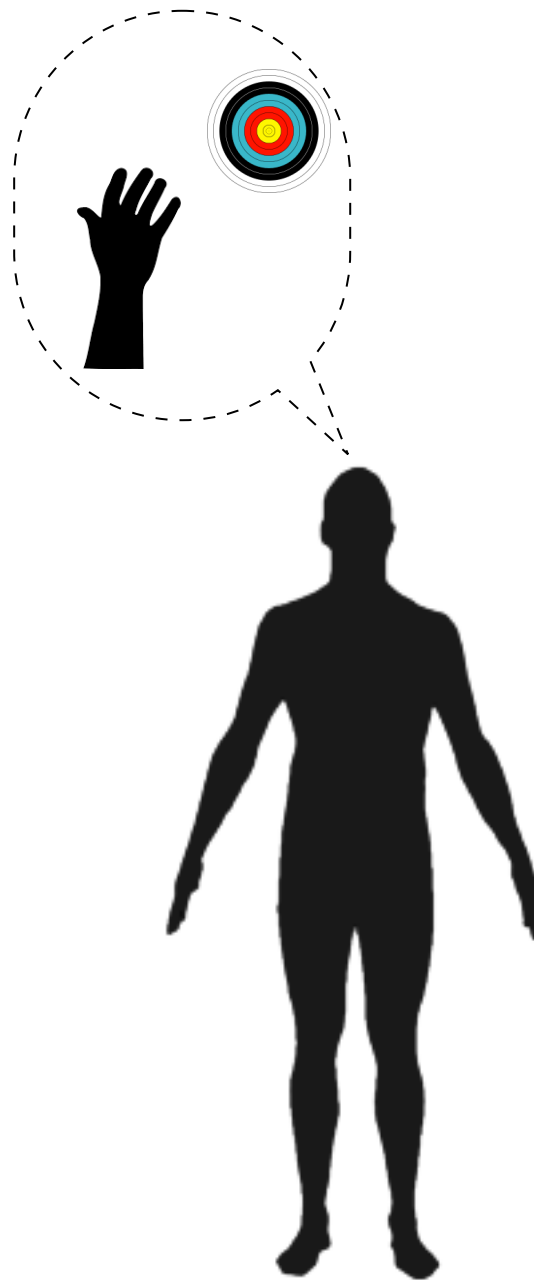
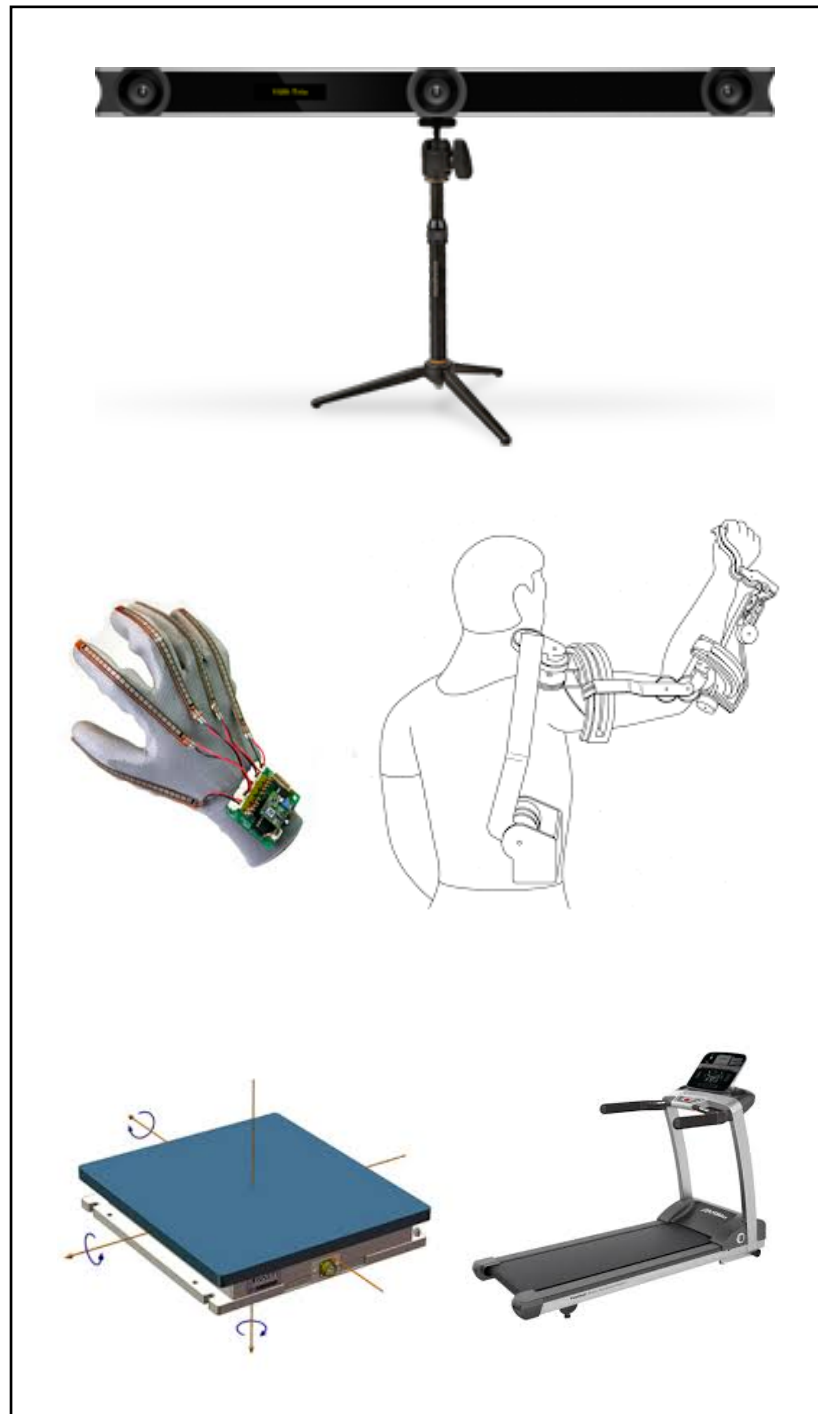






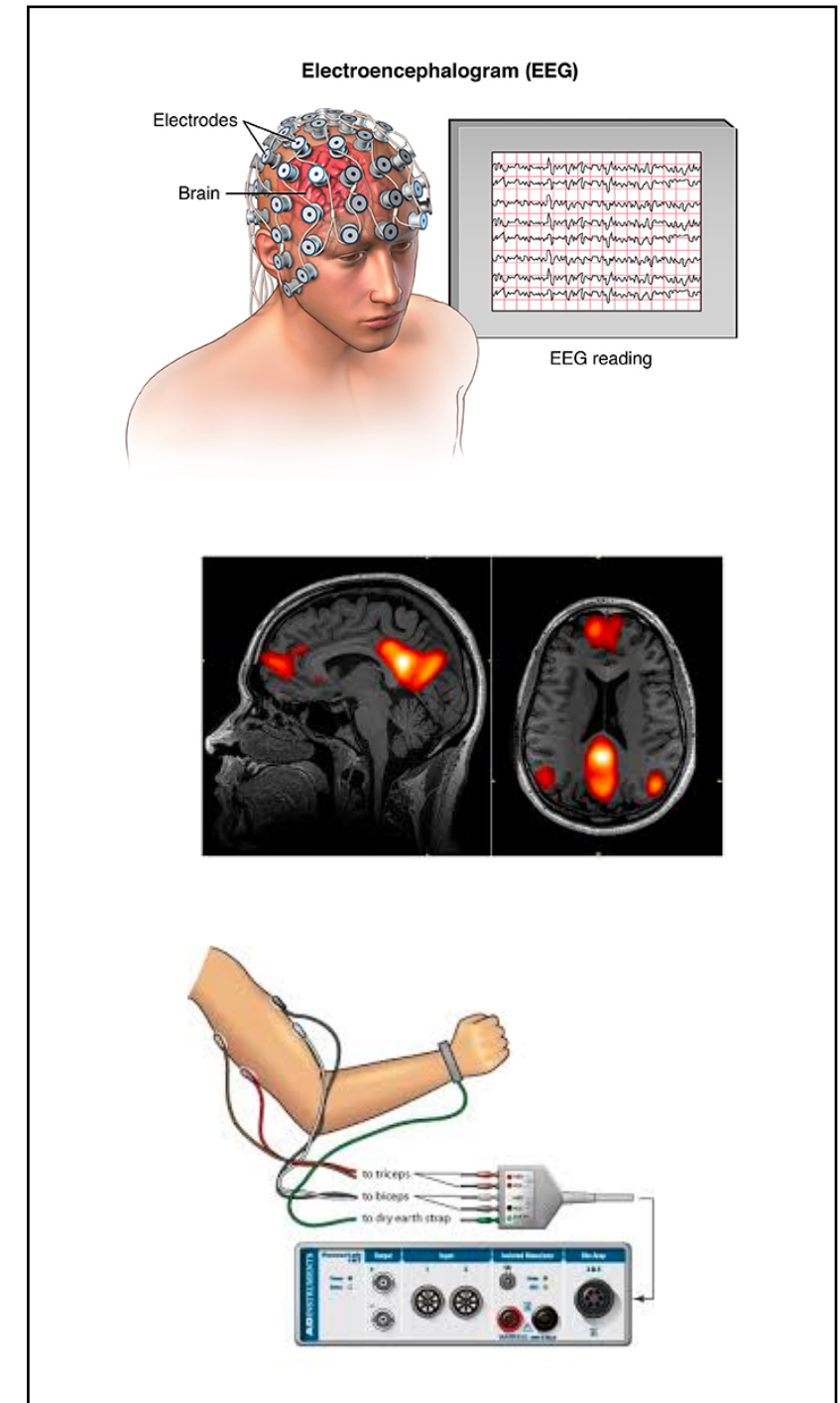


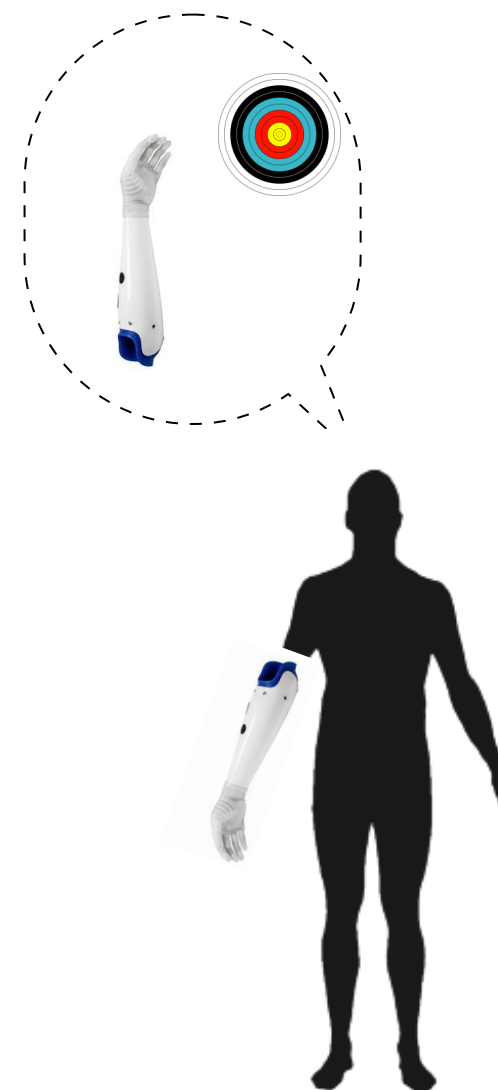
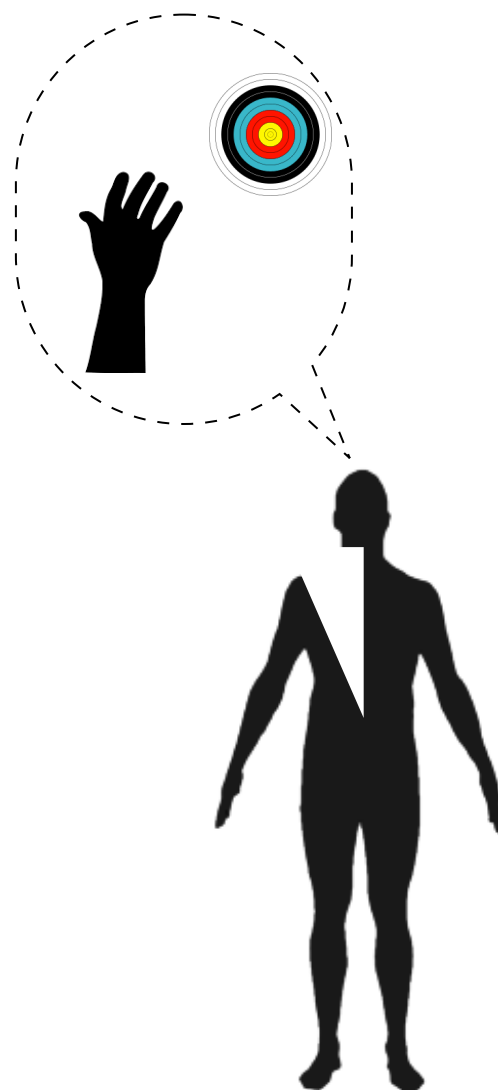
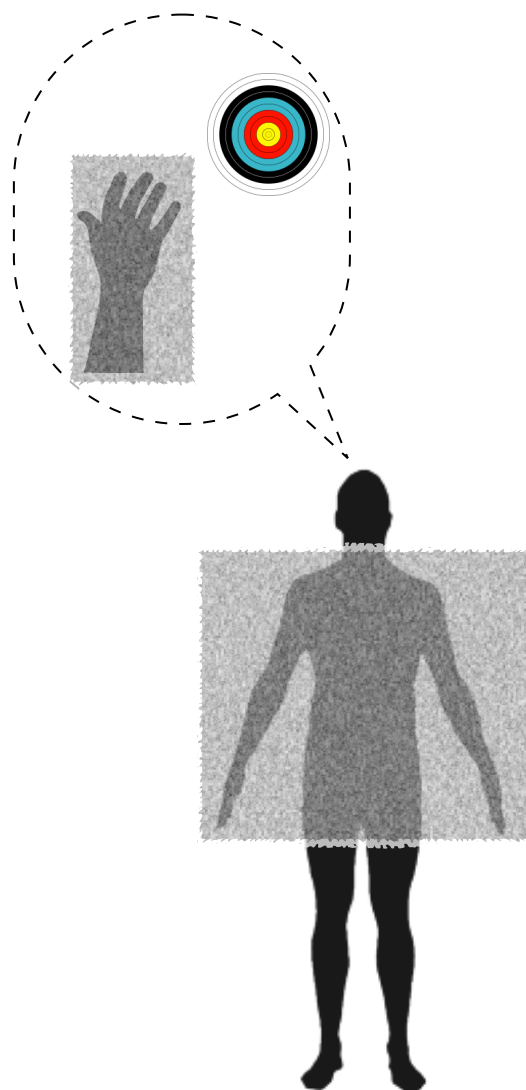
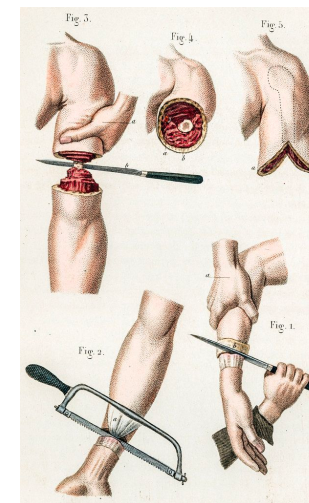
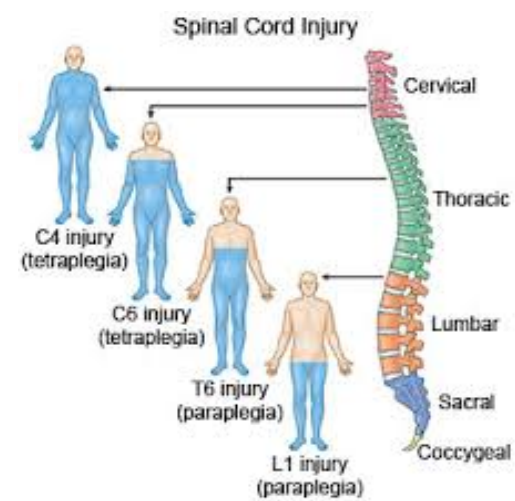
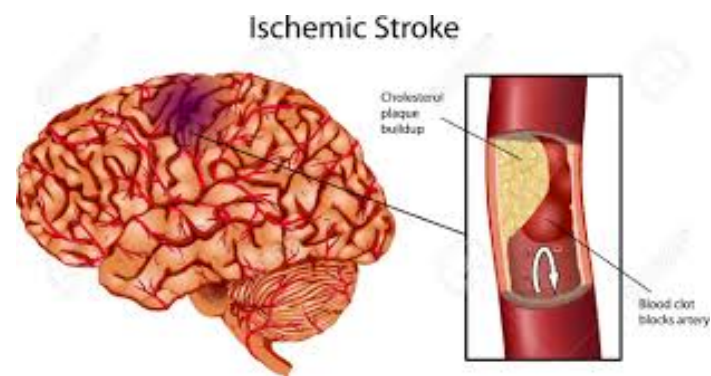
kinematics, dynamics

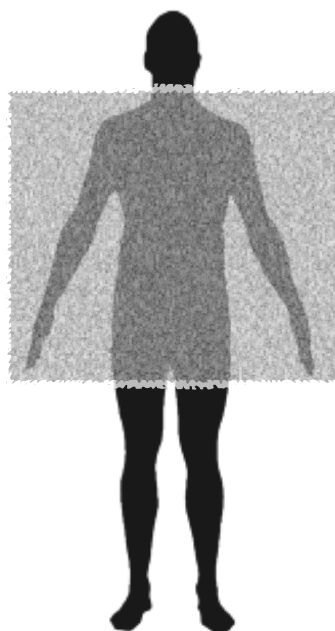
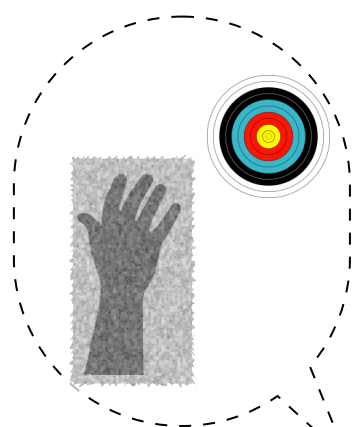
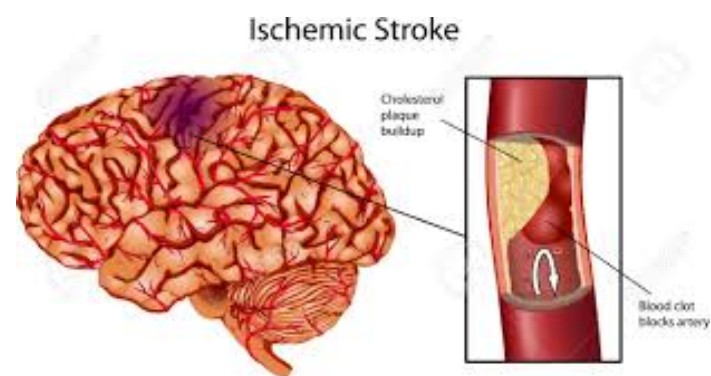


healthy subject
non-invasive
recordings

physiological signals



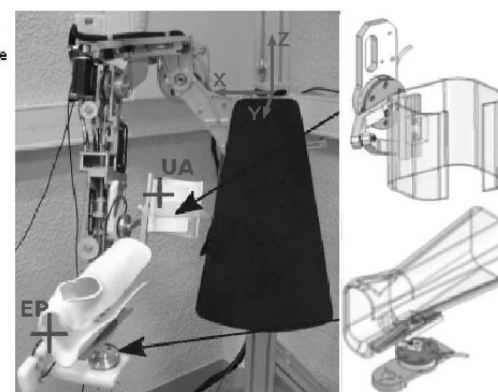
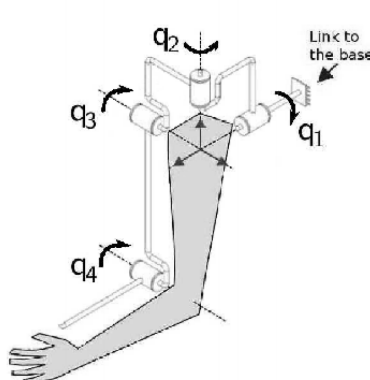




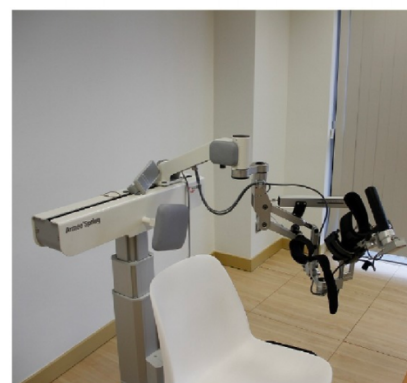
rehabilitation



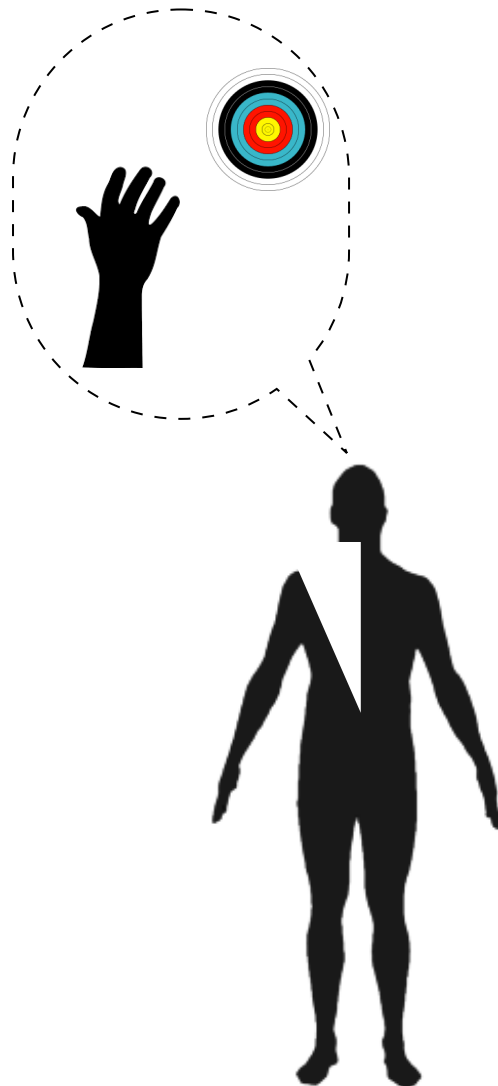
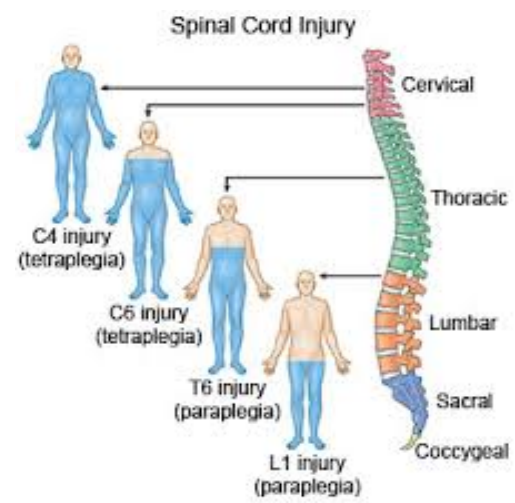
robot arm
MIT manus



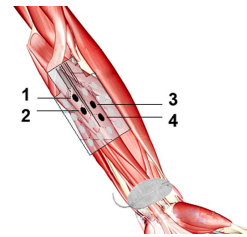
exoskeleton
ABLE (CEA-LIST)



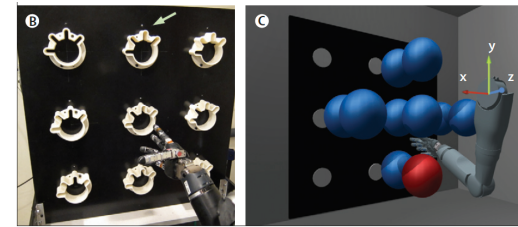
exoskeleton
Armeo Spring



substitution



myo-
electric
control



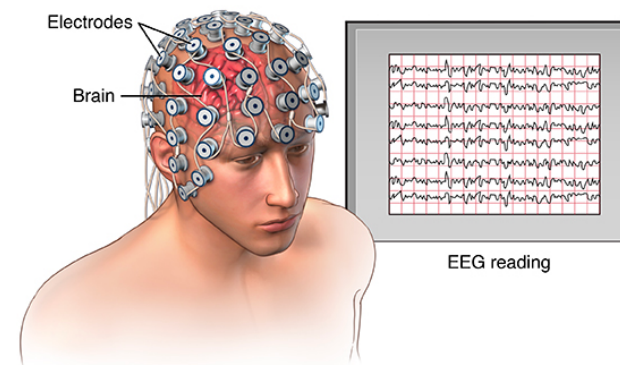
brain-
machine
interface

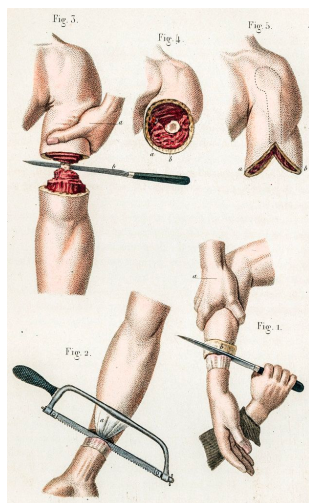


brain-
computer
interface

decoding?

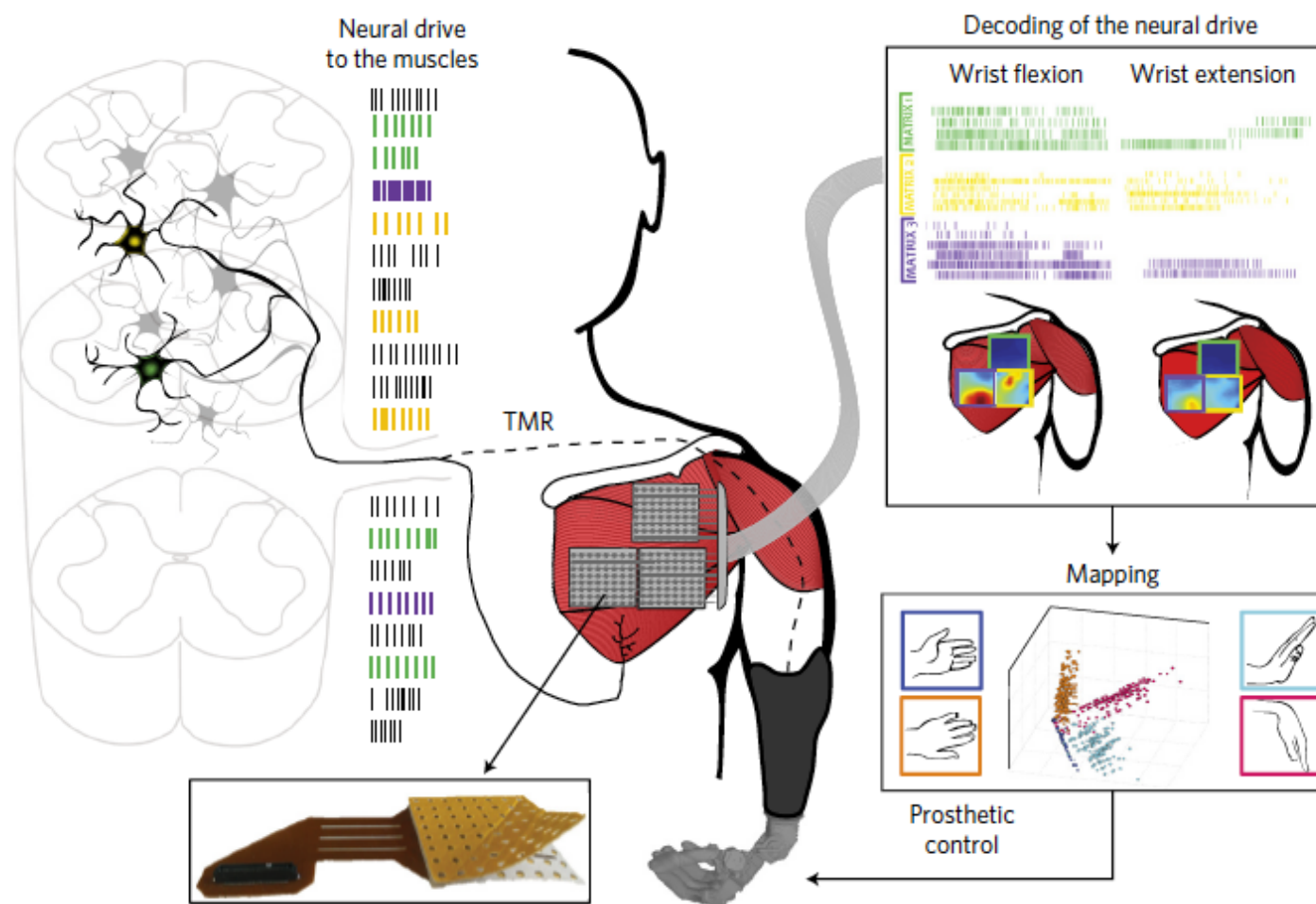
Electroencephalogram (EEG)





augmentation

Interfacing spinal motor neurons in humans
(TMR = Target Muscle Reinnervation)





MOTOR
IMAGERY

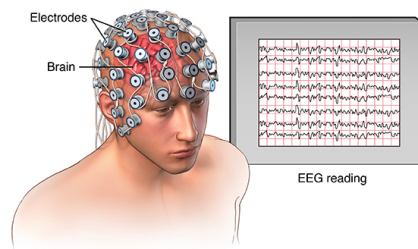
movement
intention

movement
parameters

healthy
 stroke
 SCI
 amputation

non-invasive

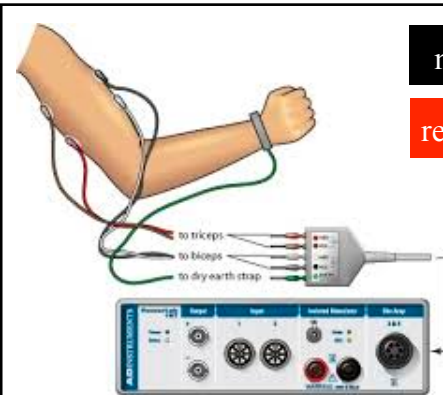
electroencephalography (EEG)



brain rhythms
 α (7-12 Hz)
 β (13-30 Hz)
 γ (25-100 Hz)

EEG
decoder

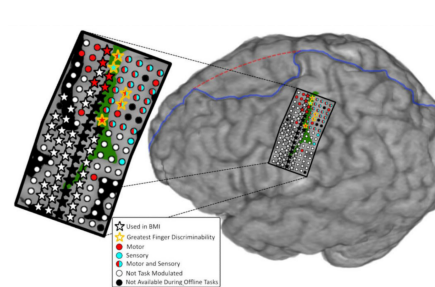
electromyography (EMG)



normal unrelated
 residual, non-damaged

EMG
decoder

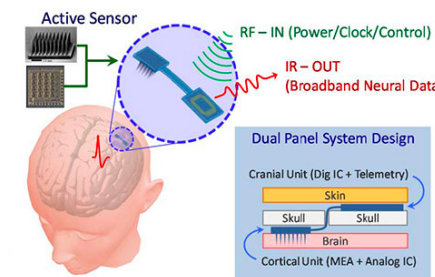
electrocorticography (ECoG)



epilepsy severe paralysis
 brain rhythms
 α (7-12 Hz)
 β (13-30 Hz)
 γ (25-100 Hz)

ECoG
decoder

multiunit recordings



neuronal
ensemble
activity
(e.g. 96
neurons)

neural
decoder

invasive

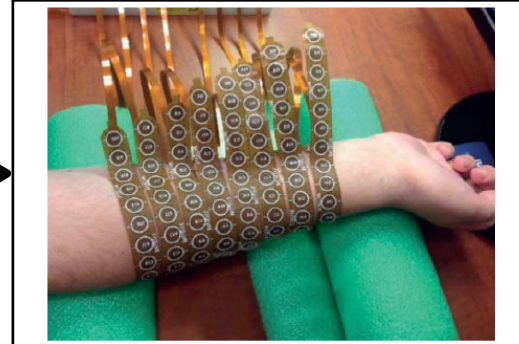
movement
intention

movement
parameters

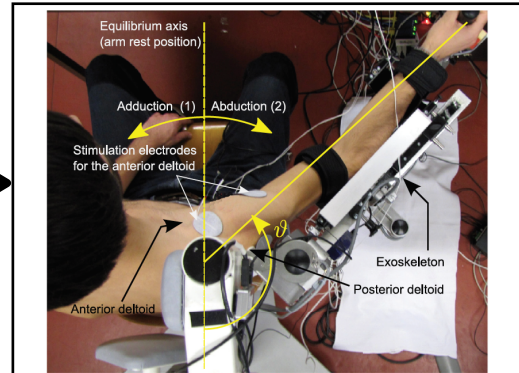
computer



NMES*



orthosis



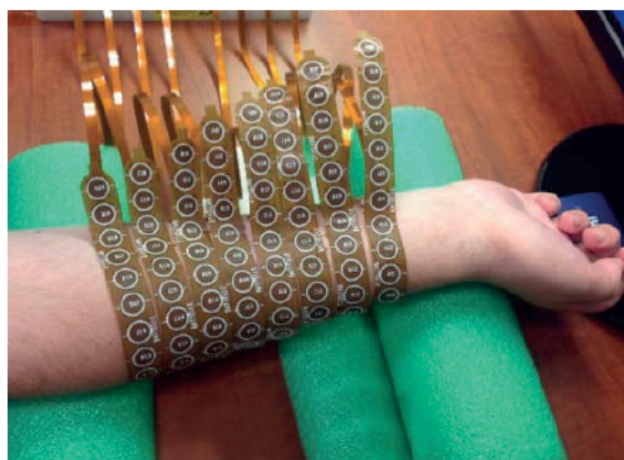
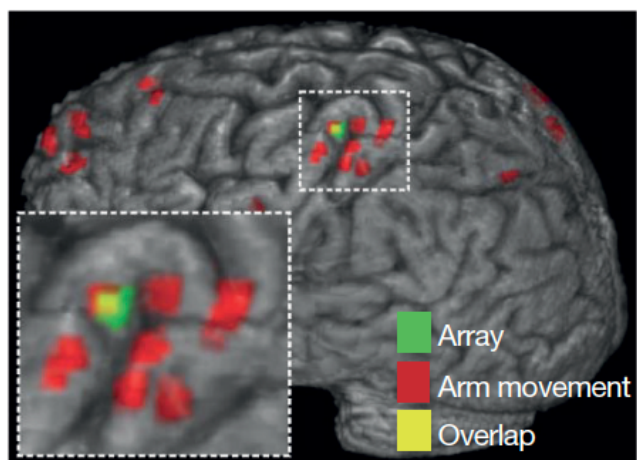
robot

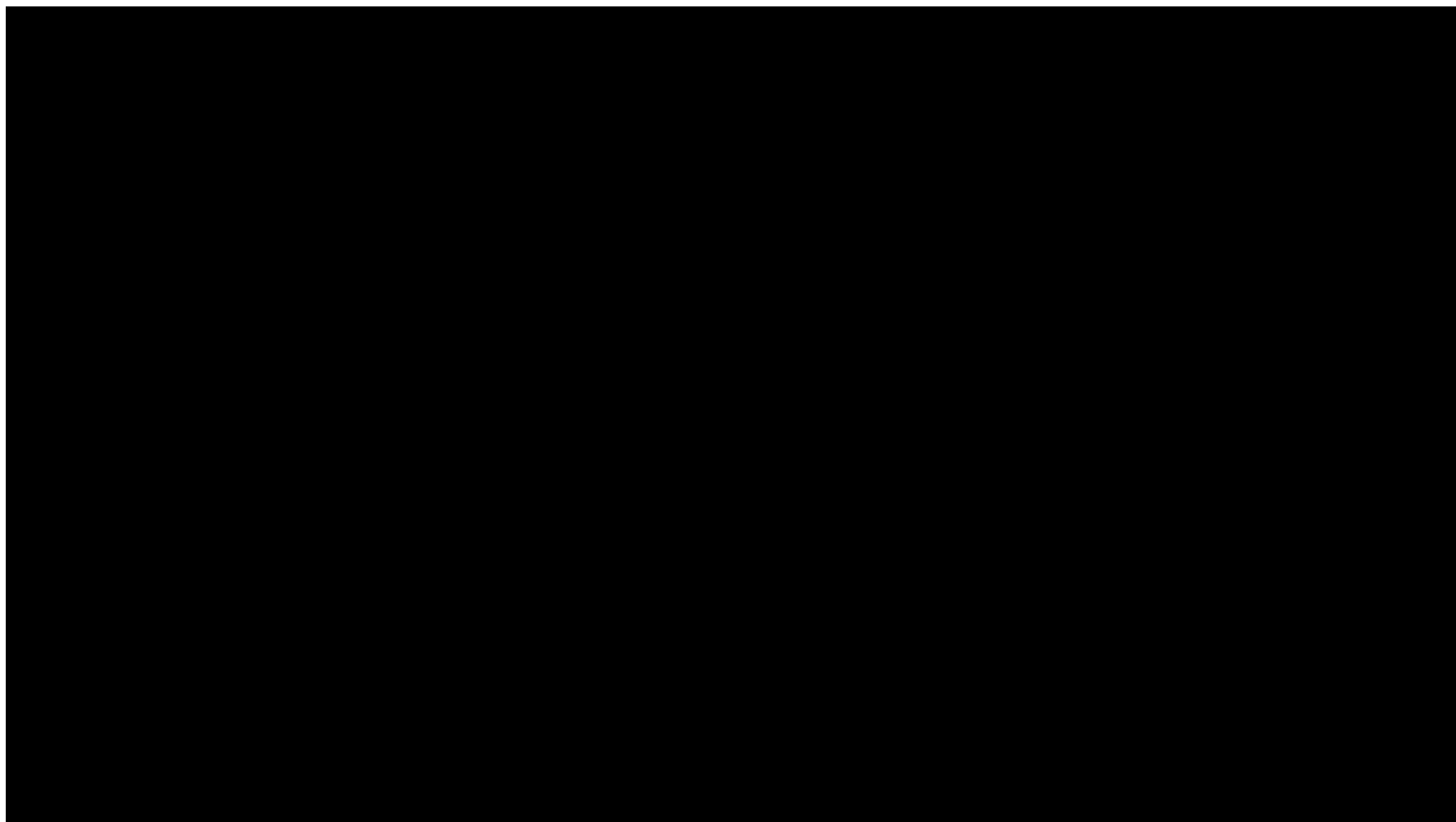


*neuromuscular
electrical stimulator











Video 1

L'épreuve de sélection de Wason

Quatre cartes

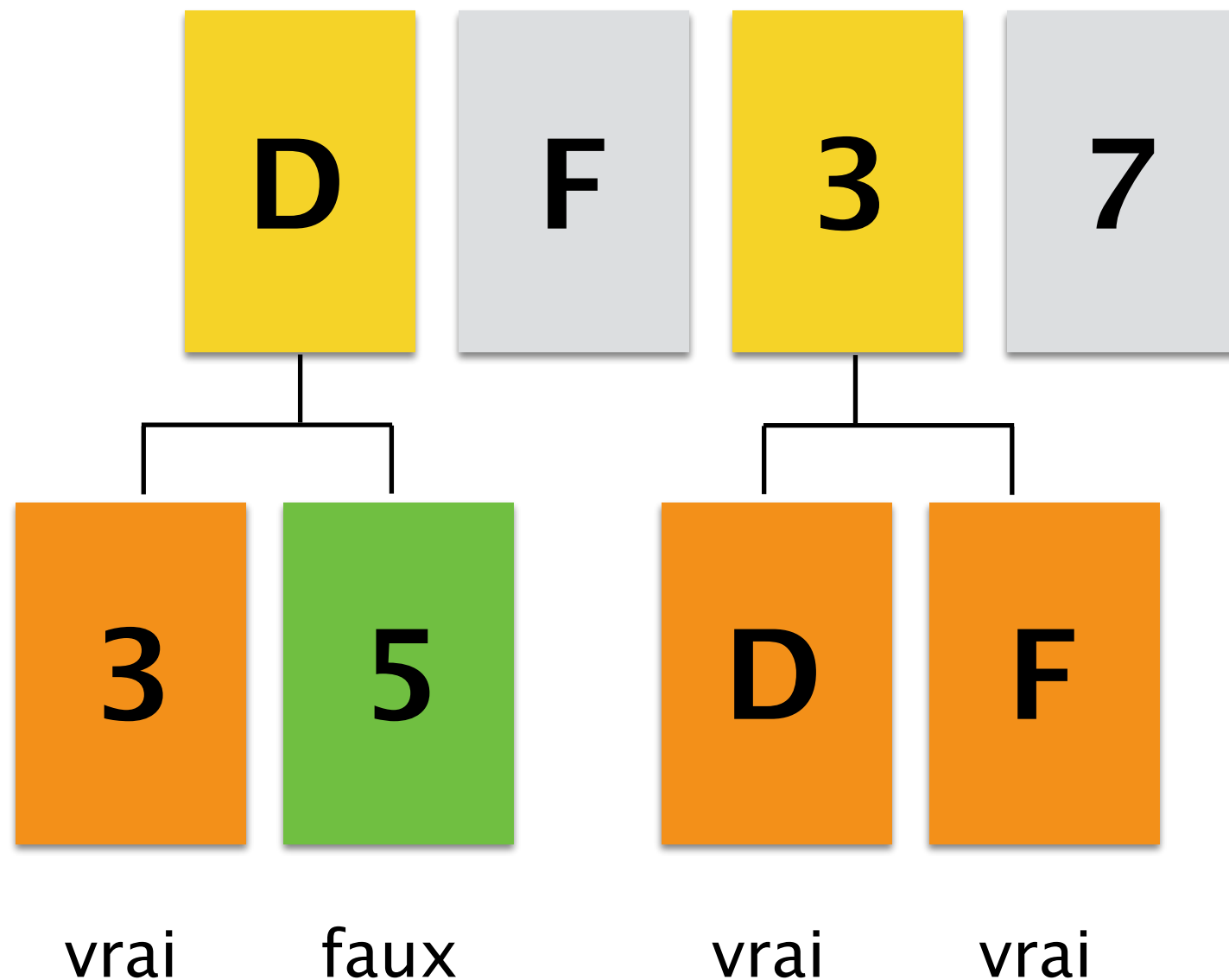


Chaque carte présente sur une face une lettre et sur l'autre un chiffre.

Quelles cartes devrez-vous retourner pour vérifier que la règle suivante a été respectée : **si une carte présente un D sur une face, alors elle doit avoir un 3 sur son autre face ?**

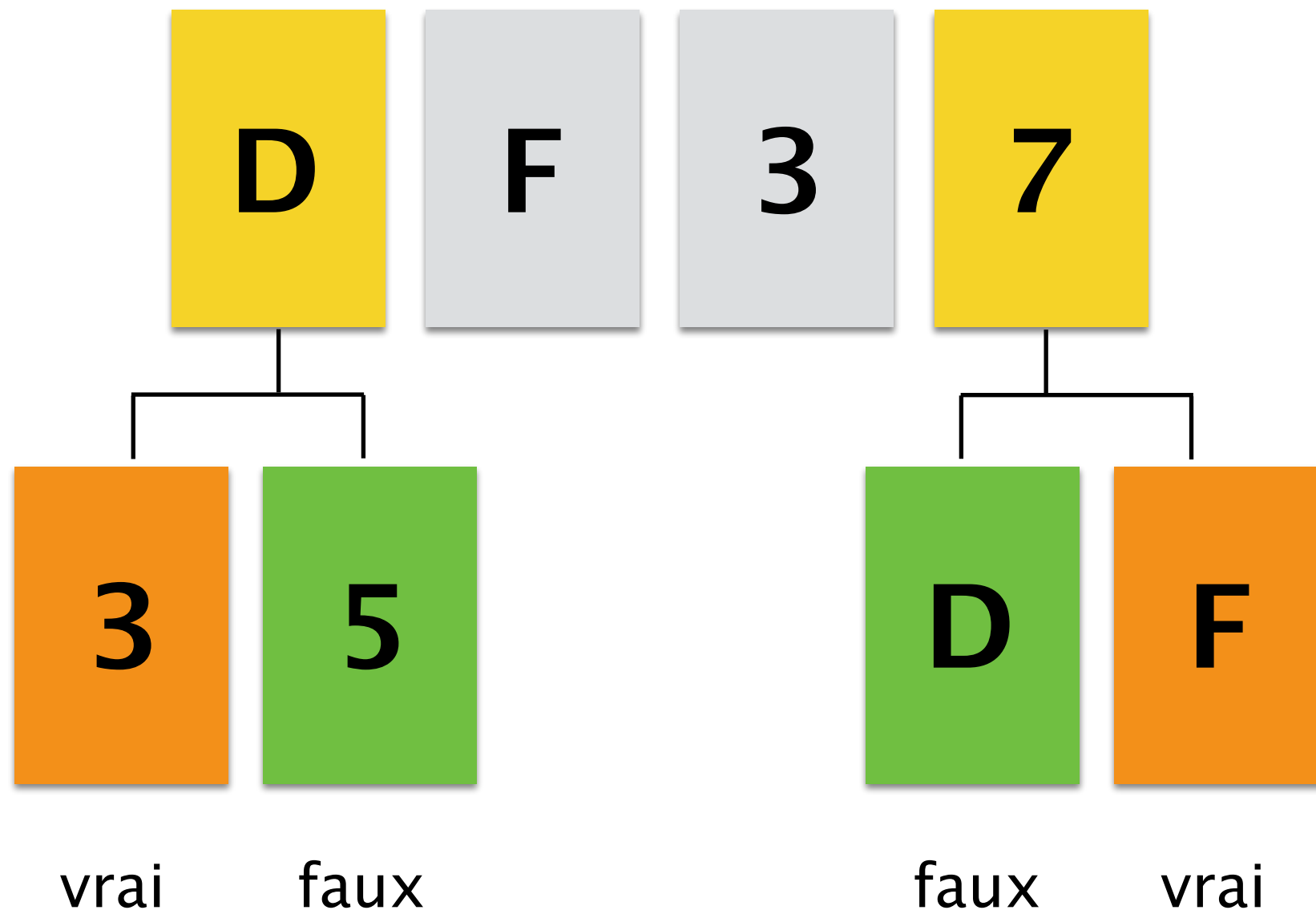
L'épreuve de sélection de Wason

Réponse majoritaire



L'épreuve de sélection de Wason

Réponse correcte



L'épreuve de sélection de Wason

Illustre la tendance à rechercher des exemples qui confirment et à négliger ceux qui infirment une hypothèse.