Cognitive Neuroscience

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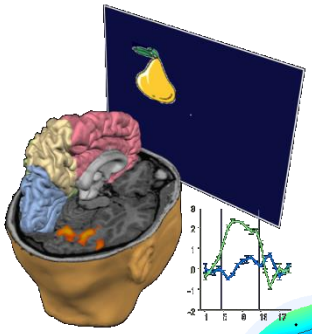
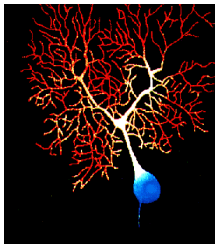
Maastricht University

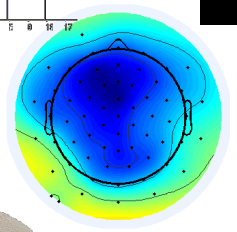
Overview

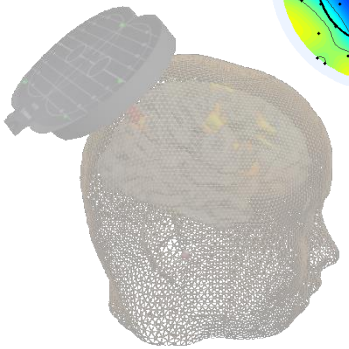
- What is *Cognitive Neuroscience* (*CN*)?
- What will you learn in this master?
- *Career perspectives*
- Master CN vs. *Research* Master CN

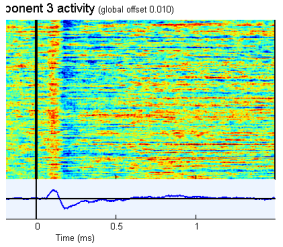
Cognitive Neuroscience











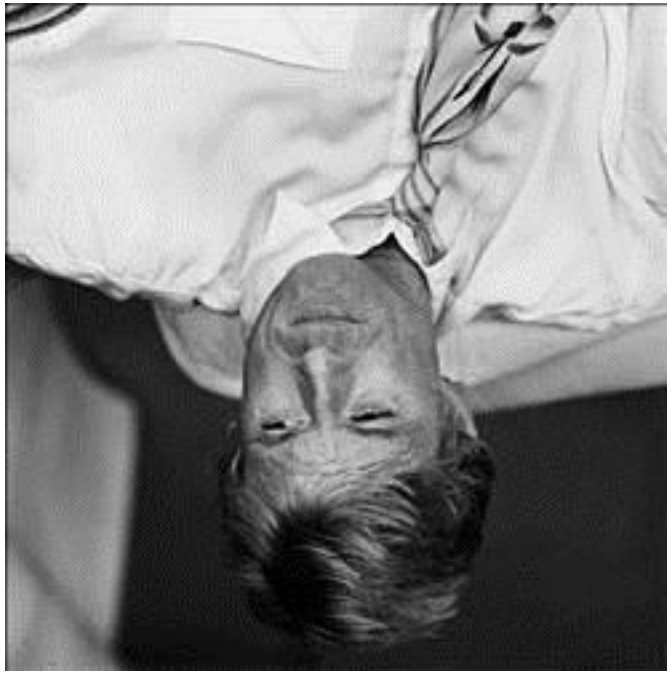
Interdisciplinary field: psychology, biology, bioengineering, mathematics, physics, computer science ...

What is *Cognitive Neuroscience*?

- primary object of study: normal brain function
- but CN also involves studies in patients with problems in particular functions

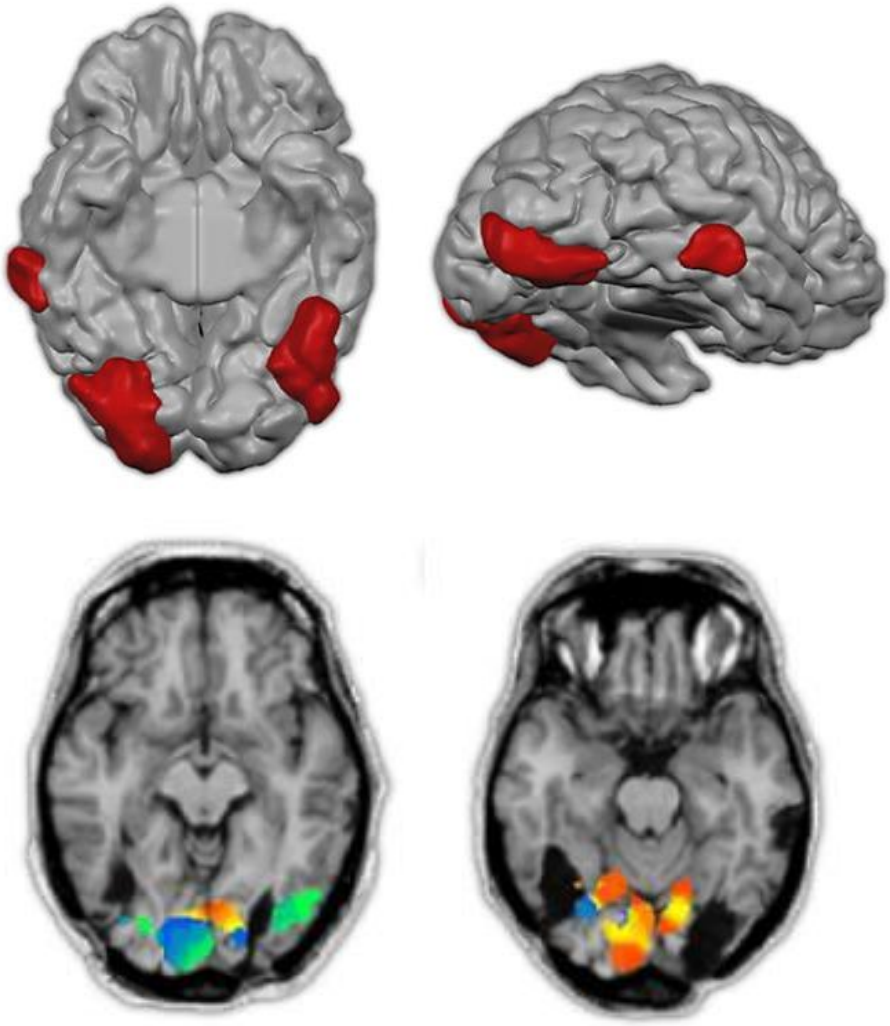
→ no direct diagnostics
→ but neuroscience methods become more and more important in clinical settings

How can we learn about normal brain function from patients?



How can we learn about normal brain function from patients?


SIEMENS
MAGNETOM Trio

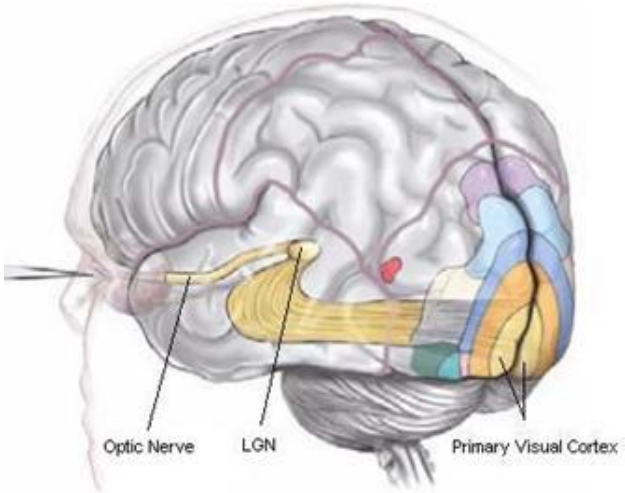


What will you learn in this Master?

CN Master core courses

1. Visual Perception and Attention

Peter De Weerd



"Still-life vase with 12 flowers" (van Gogh)

Methods of interest

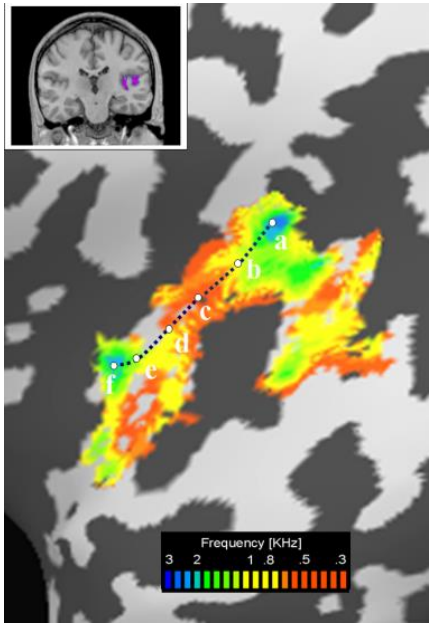
- single-cell recording
- fMRI
- EEG/ERP
- psychophysics

Processes of interest

- basic visual processing
- selection mechanisms
- modulation of perception by attention
- conscious experience and behavior

2. Auditory and higher order language processing

Bernadette Jansma

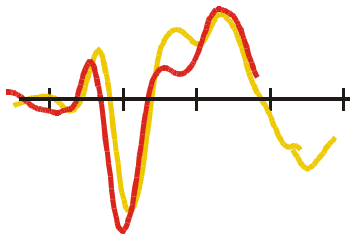


Processes of interest

- basic auditory processing
- auditory attention
- How do we understand speech?
- How do we generate speech?
- multisensory integration

Methods of interest

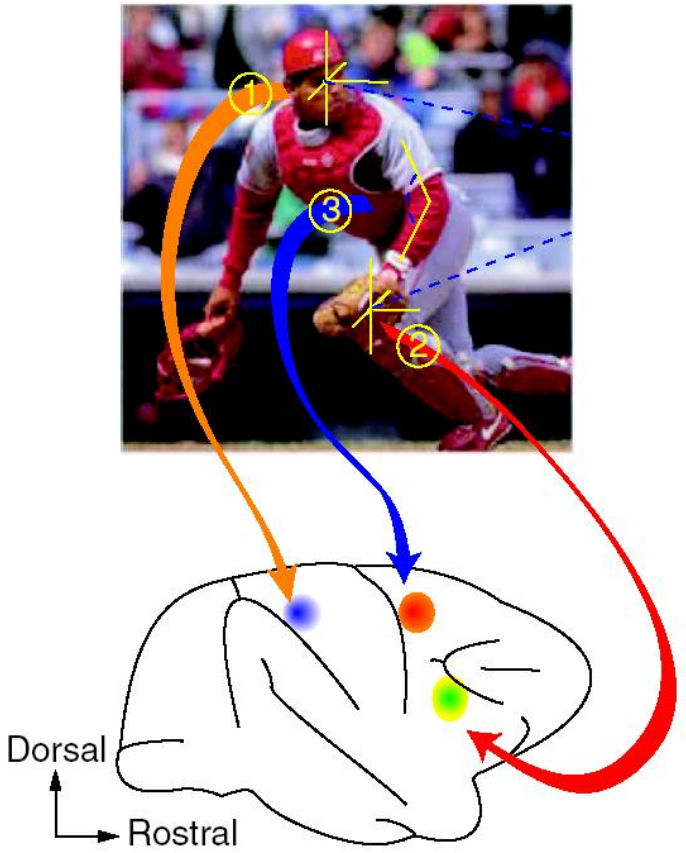
– EEG/ERP
– single cell recording
– fMRI



3. Sensory and motor systems
Amanda Kaas & Joel Reithler

How does the brain execute motor actions based on ongoing perceptions?

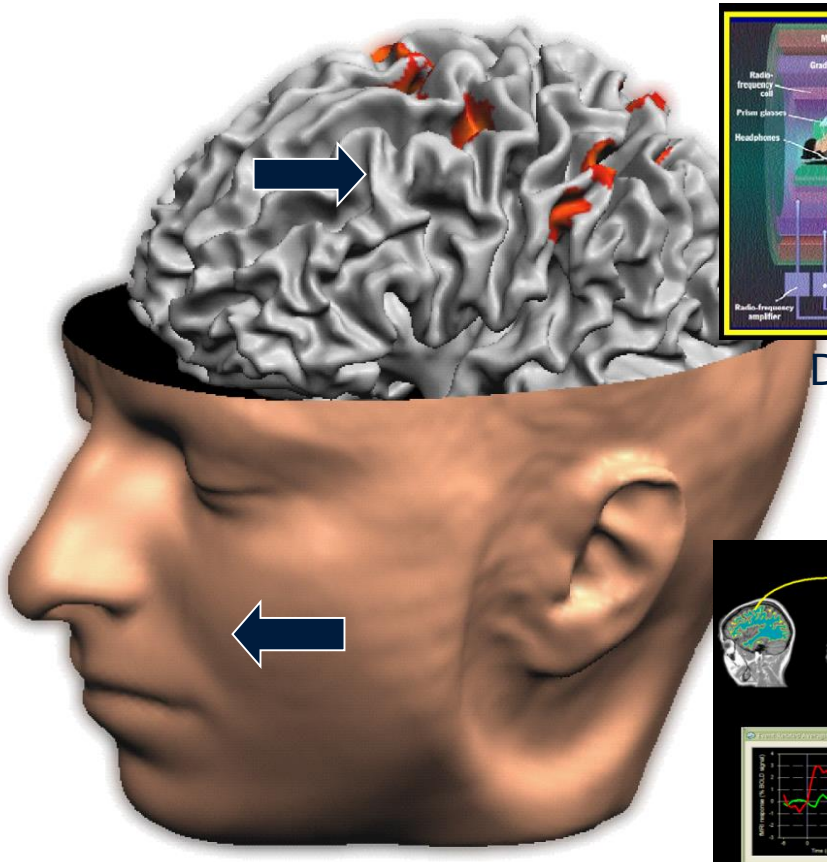
- representation of actions
- visual guidance of movement
- action planning and learning

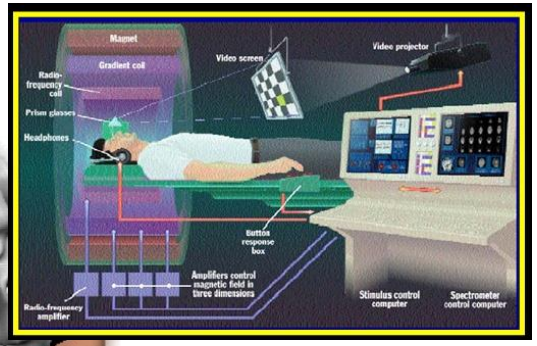


4. Brain imaging methods: fMRI

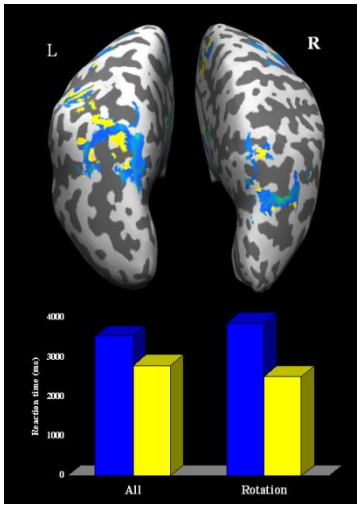
Elia Formisano

Experimental desig

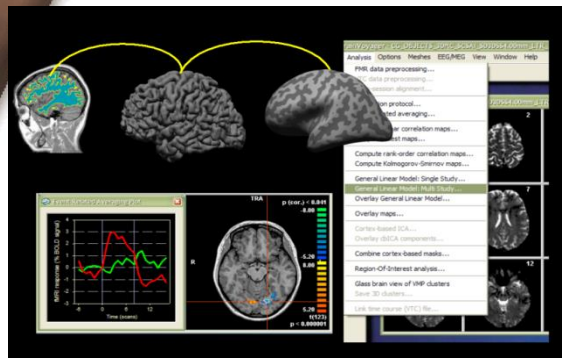




Data acquisition



Results & Interpretation

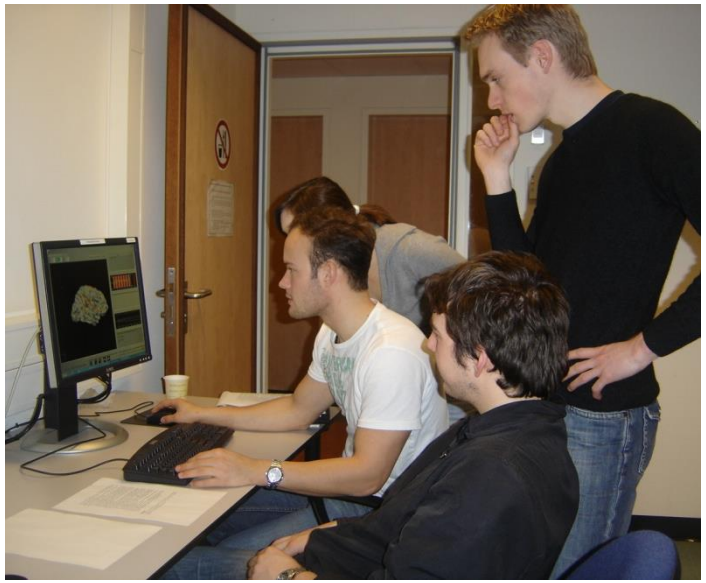


Data analysis

What will you learn in this master?

CN Master Practical courses

Two practical courses



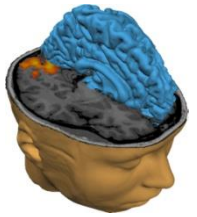
EEG/ERP
Fren Smulders

fMRI
Elia Formisano

Two practical courses

- plan, set-up and perform EEG/fMRI experiments
- analyze obtained data with specific software
- interpret results and write reports

Examples internships Master CN



Barbara van Doorn, Columbia University, New York, USA:
Visual modulation of early auditory brain responses

Esther Silbernagel, FPN:
Measuring attentional biases to health messages using EEG

Astrid Frankfort, FPN:
Food reward processing in overweight and healthy weight participants

Jessica Bath, Universitätsklinikum Aachen, Germany:
Gender differences in cognitive performance & white matter integrity: a DTI study

Lukas Schilberg, Harvard Medical School, USA:
Noninvasive brain stimulation (TMS) in fundamental and clinical research

Dietmar Hestermann, Dalhousie University, Canada:
Cognitive function, learning and memory in mice models of Alzheimer's disease

Career perspectives

- *fundamental brain research* in academic settings
- using neuroimaging techniques in *applied/clinical research* settings
- teaching and other jobs that require a university degree and/or knowledge about brain & neuroimaging

CN Master or CN Research Master?

Master CN

- one-year programme → gain fundamental knowledge in perception and behaviour
- central methods: EEG & fMRI
- double degree possible (one year here, one abroad)
- might be sufficient for PhD abroad (US, Canada)

Research Master CN

- two year programme → more in-depth knowledge with respect to content and methodology
- optimal preparation for subsequent PhD programme

More information, Questions?

website FPN – Cognitive Neuroscience

CN coordinator: Giancarlo Valente
giancarlo.valente@maastrichtuniversity.nl

Admission Requirements

Bachelor's degree		Remarks
Dutch University Bachelor Psychology	Admissible	
Non-Dutch University Bachelor Psychology	Check by Board of Admissions	
All other University Bachelors*	Check by Board of Admissions	
University of Applied Science (HBO)	Not admissible	The Faculty does not offer any pre-master programmes

** Additional requirements*
- *Courses in Statistics (min. 18 ECTS);*
- *Knowledge of Psychology (min. 4 courses);*
- *The Bachelor's degree must be substantially relevant to the Master's specialisation of your choice;*
- *You are requested to write a one-page motivation letter which specifies why you want to follow the master's programme of Psychology and the specialisation of your choice.*

For more information visit the stand 'Application & Admission' at the information market


CN Master
Mijn-Album.nl