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Master in Psychology
Cognitive Neuroscience

Lars Hausfeld

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Overview

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

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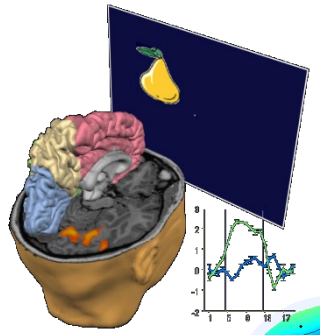
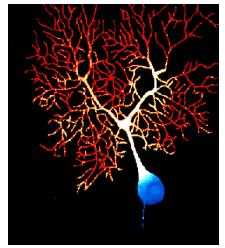
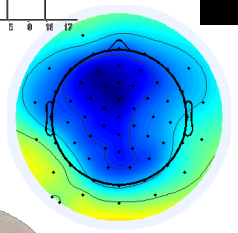
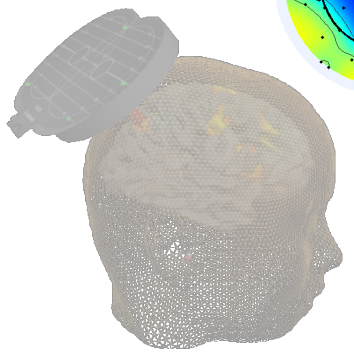
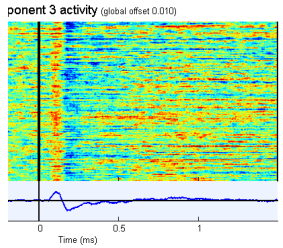
Cognitive Neuroscience











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

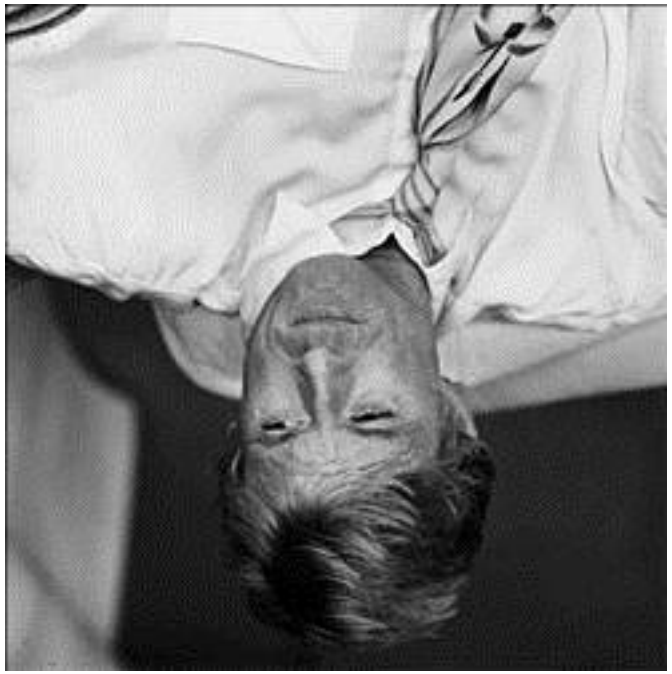
What is *Cognitive Neuroscience*?

- 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?



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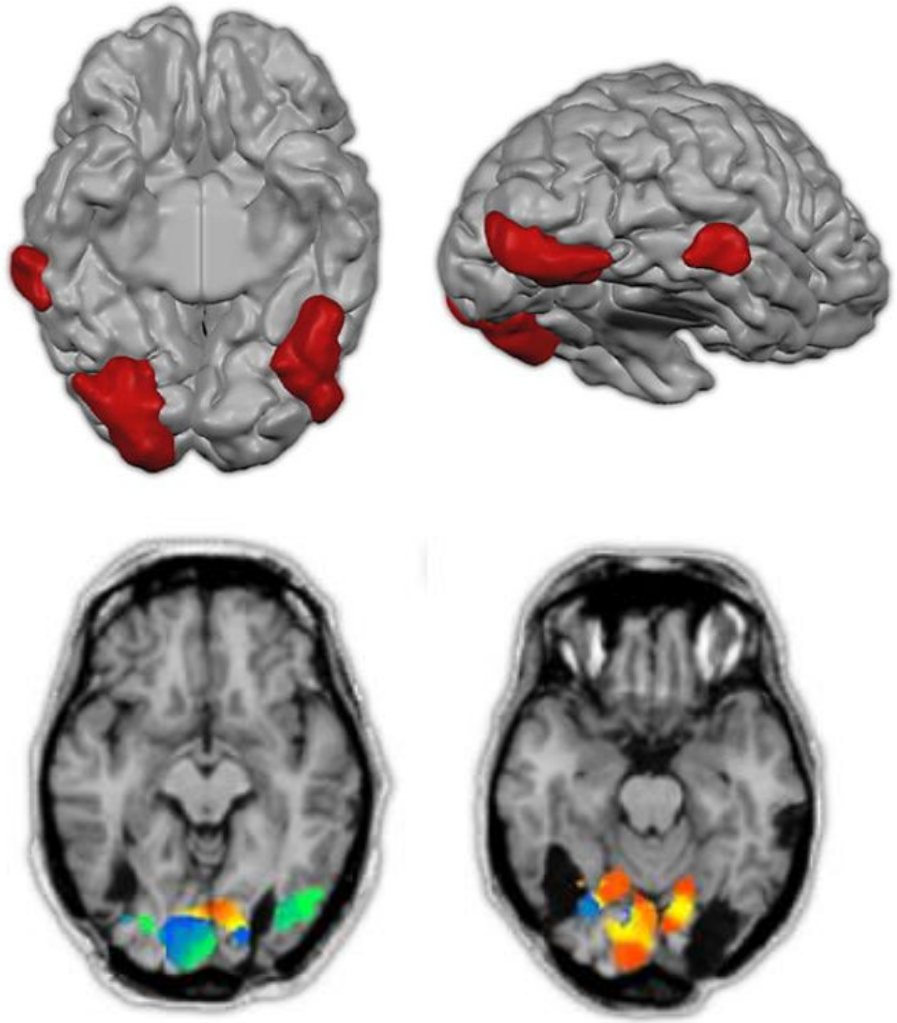
How can we learn about normal brain function from patients?


SIEMENS
MAGNETOM Trio



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What will you learn in this Master?

CN Master core courses

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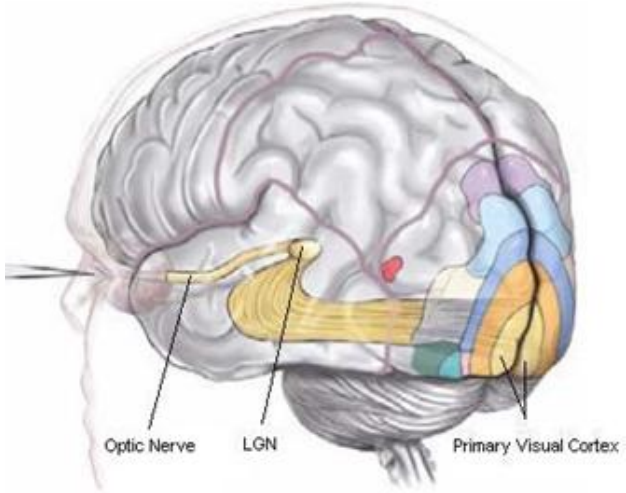
1. Visual Perception and Attention
Peter De Weerd



"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

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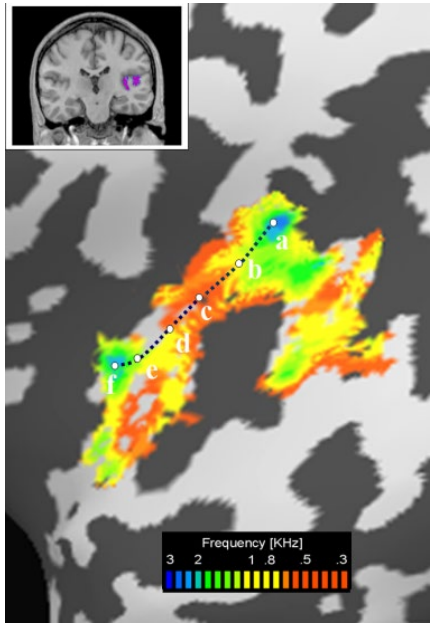
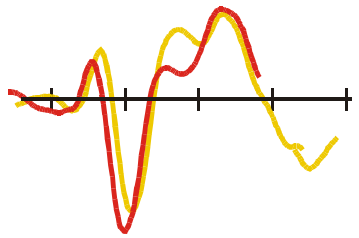
2. Auditory and higher order language processing
Bernadette Jansma



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



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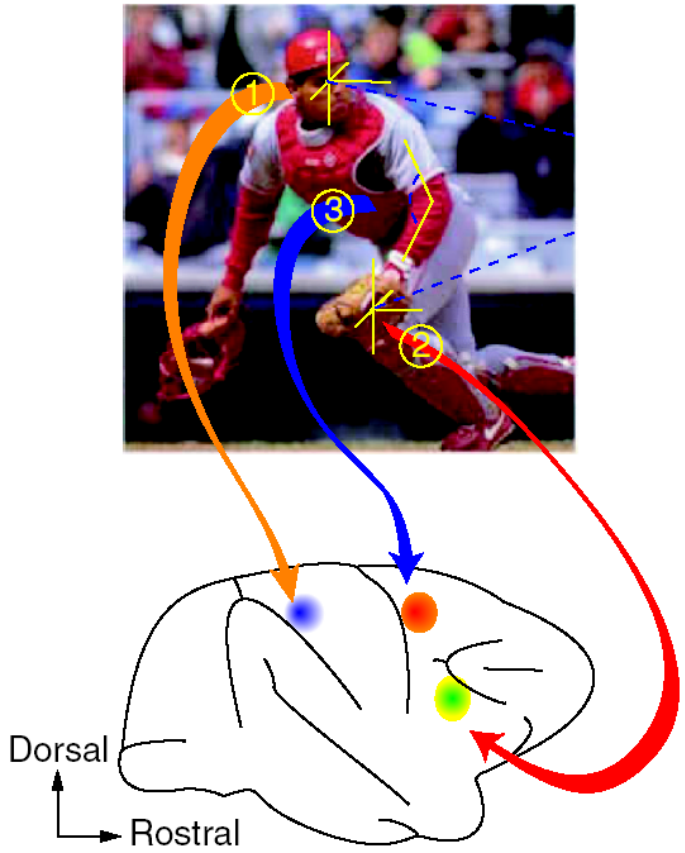
3. Sensory and motor systems
Amanda Kaas & Joel Reithler

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

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



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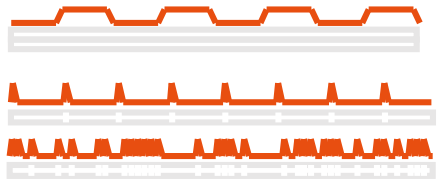
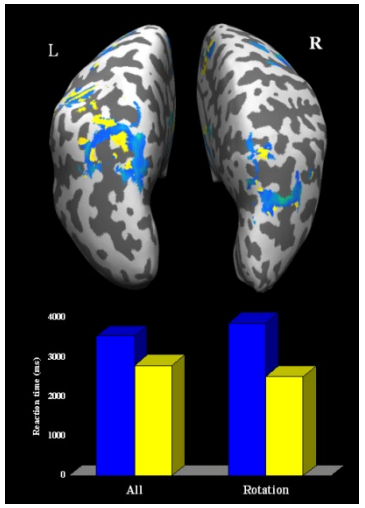
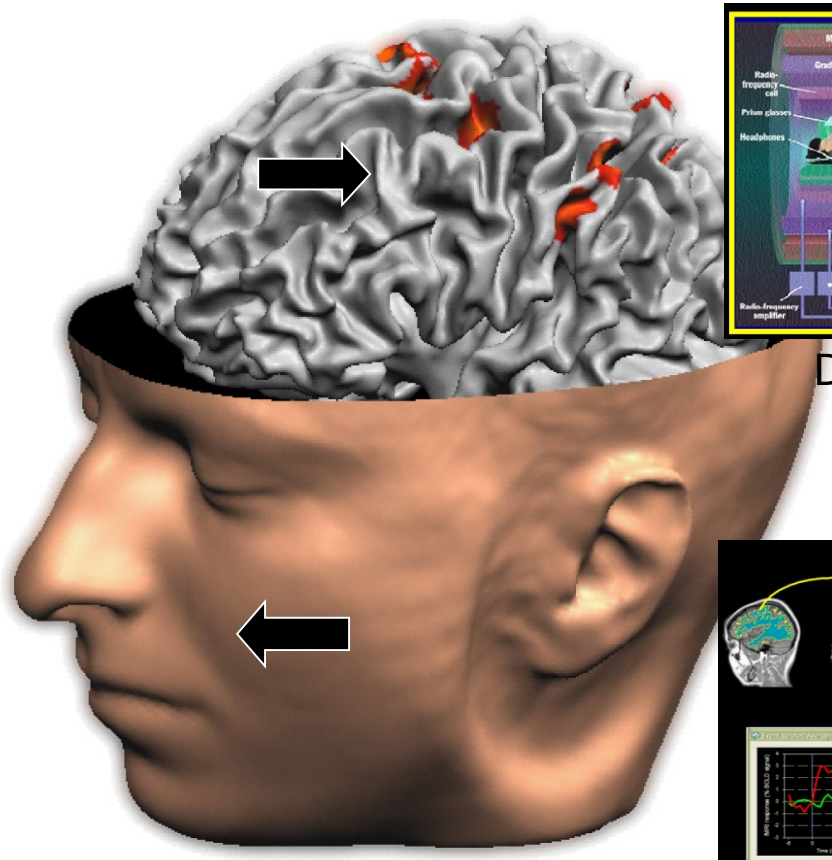
4. Brain imaging methods: fMRI
Elia Formisano

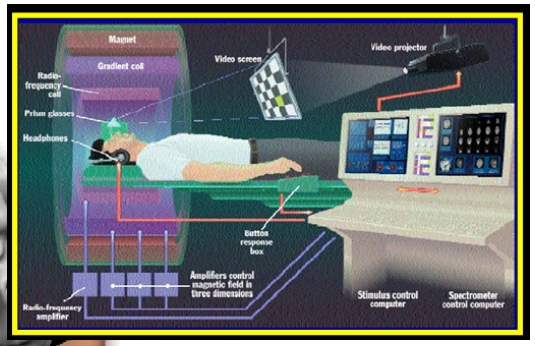


Experimental design

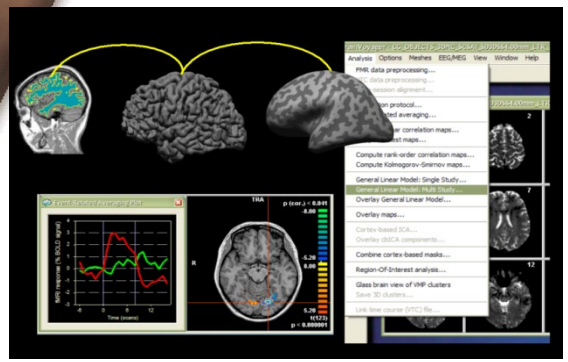


Results & Interpretation





Data acquisition



Data analysis

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What will you learn in this master?

CN Master Practical courses

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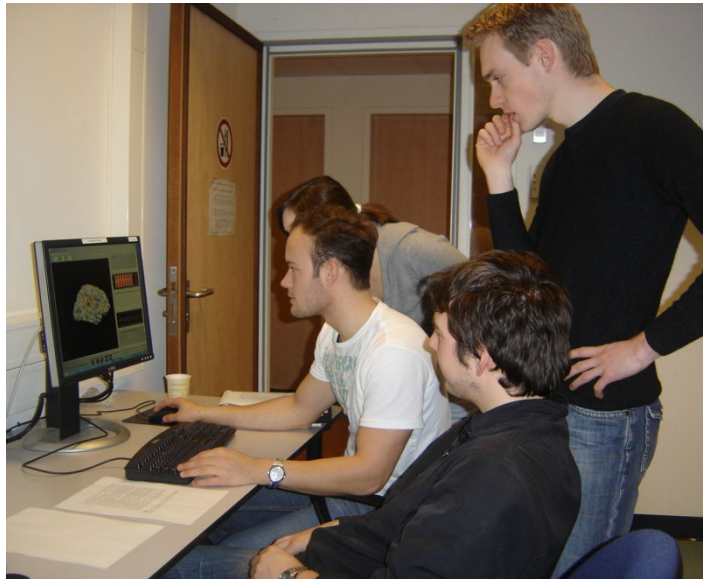
Two practical courses



EEG/ERP
Fren Smulders

fMRI
Elia Formisano

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Two practical courses

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

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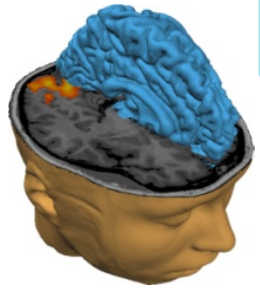
Examples internships Master CN



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

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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

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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 programme abroad (US, Canada, UK)

Research Master CN

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

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More information, Questions?

website FPN – Cognitive Neuroscience

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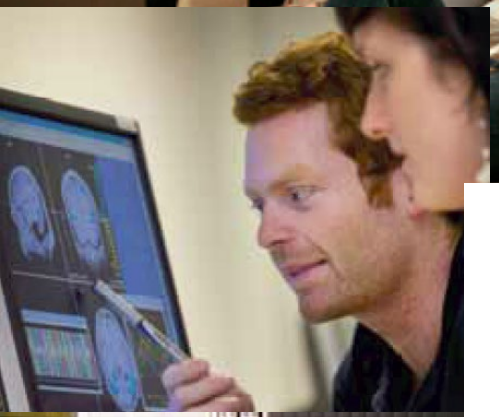
Admission Requirements

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



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