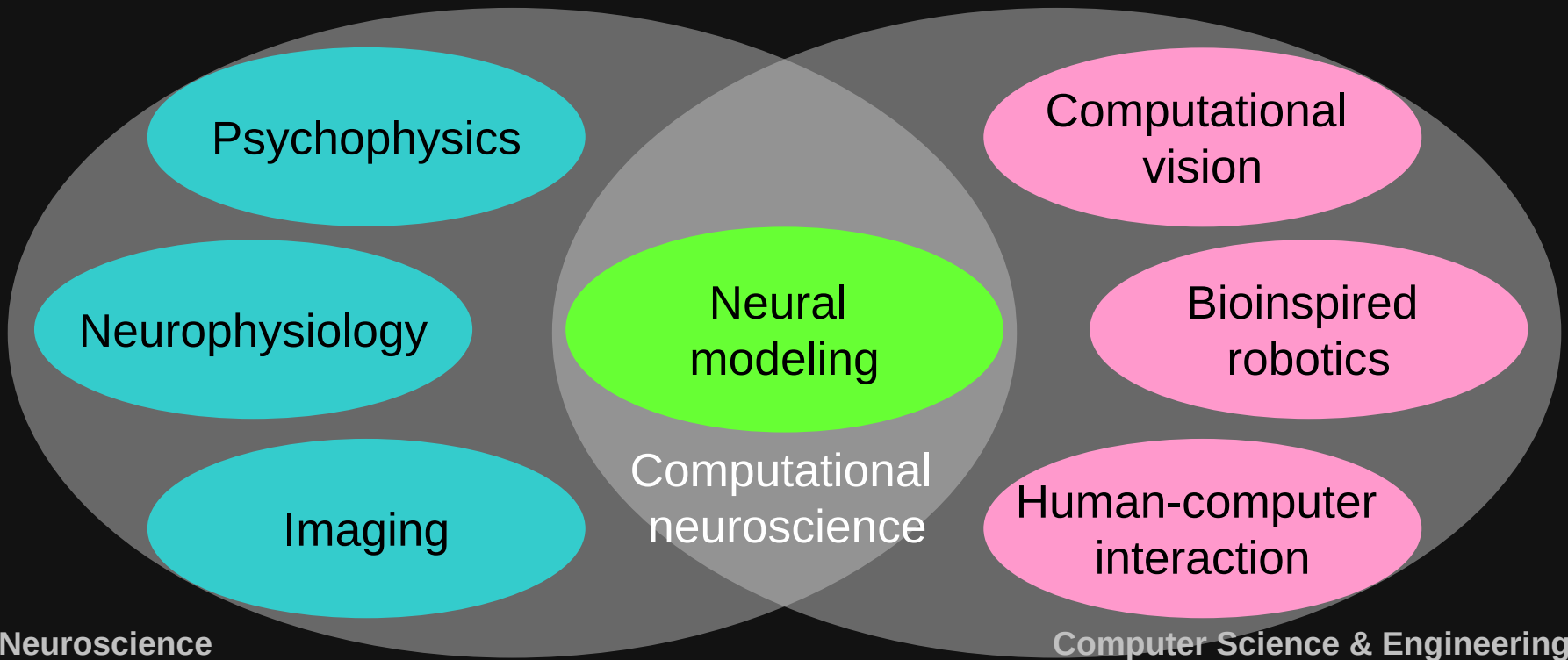
Vision Science @ Ulm University

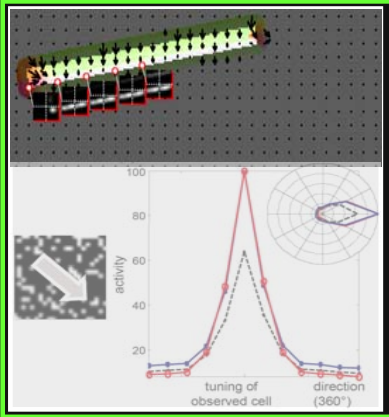
Institute of Neural Information Processing
(**Prof. Heiko Neumann** • email: heiko.neumann@uni-ulm.de)

Computer Vision – Developing core technology for intelligent analysis of sensor data and automation

How does the brain control behavior?

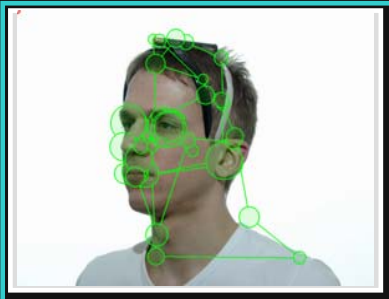
How can technology emulate biological intelligence?





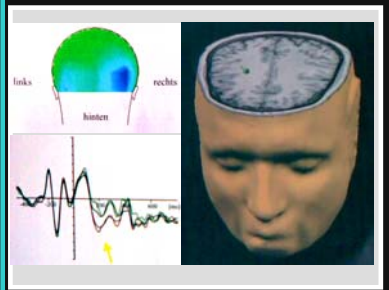
Neural Modeling

- Motion perception
  - Aperture problem
  - Motion segmentation
  - Spatial navigation
- Attention and visual search
- Surface boundary detection
  - Feature extraction
  - (Illusory) contours
- Texture segregation
- Stereopsis



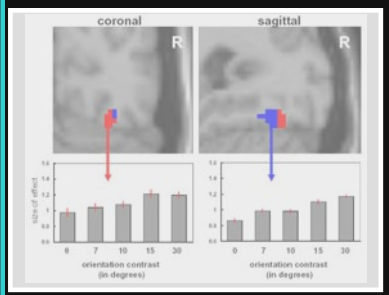
Psychophysics

- Form & motion perception
- Eye tracking



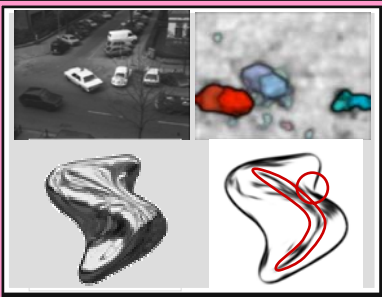
Neurophysiology

- *ERP* for figure-ground analysis



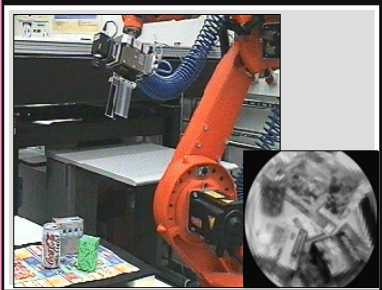
Imaging (fMRI)

- Feature contrast in texture boundaries



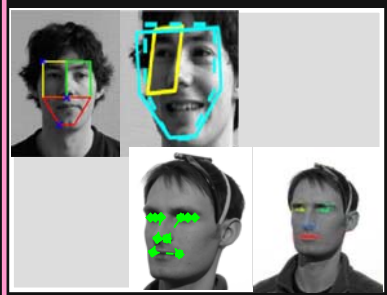
Computational Vision

- Multi-scale process.
- Boundary grouping
- Motion analysis



Bioinspired Robotics

- Space-variant active vision
- Robot navigation



Human-Computer Interaction

- Emotion recognition
- View direction