

Aging, cognitive impairment and activity analysis



C. Gabaude - Ifsttar, Lescot

Context



- The population is aging
 - This goes with higher incidence of neurodegenerative diseases
- ➔ It raises the matter of the preservation of personal autonomy

The socio-economic stakes are huge and the research stakes become more refine

- Analyze the influence of various cognitive troubles on activities of daily living
- Understand difficulties encountered and specify needs by developing the appropriate methods and tools
- Evaluate the benefits of an intervention

General questioning



How can computer science and the technology help the elderly or the brain damaged persons?
(numerical compensation)

A promising avenue has opened up

- Rehabilitation
- Development of way finding assistance
- Development of driving assistance



➔ The activity analysis is quit unique to answer this question and to give new research directions

Specific questioning for activity analysis

- What is activity analysis?
 - From what and/or when we are conducting an activity analysis?
 - How do we identify our practices, methods or theoretical background?
 - How can it be conducted?
 - Through various methodologies (direct observations and review of the work records will be examined in this session)
 - Discussing the complementarities between activity and task analyses
 - Joint use of quantitative and qualitative methods and comprehensive interviews
 - Identifying operational data that best reflects the performance of activities
- ➔ A main difficulty: the researcher has to construct and relate his/her own activity for activity analysis

A focus on virtual reality

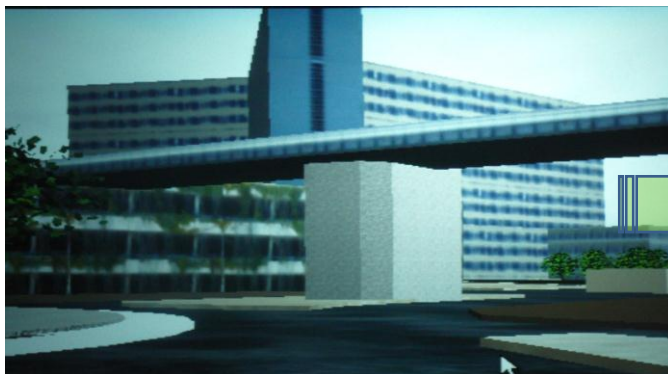
- Four active members of our group will discuss the added value of virtual reality to collect, to process and to interpret data on cognitive aging
 - Various tools will be presented
 - Simulator to study spatial abilities
 - Human object memories from everyday scenes (HOMES) test
 - Driving simulator and the driving performance scoring
- ➔ A discussion on different ways to conduct activity analysis and an exploration of the tools' validity by comparing virtual and real activity



Bernard N’Kaoua

Phoenix research team, Inria Bordeaux

- A research topic on spatial Cognition and virtual/real transfer while learning (Gregory Wallet PhD)
- Influences of visual reliability, route complexity and retention delay on spatial abilities
- A critical view on the assessment methods to study the transfer of learning
 - Recall in real situation
 - Thumbnail sketch of the situation
 - Picture classification in a chronological order



TRANSFERT



Hélène Sauzéron

Phoenix research team, Inria Bordeaux

- A research topic on the evaluation of HOMES test
 - Specificity and sensitivity of measures
 - Relationship with memory complaints
- An interesting approach highlighting the complementarity between neuropsychological tests and activity analysis
- Some attractive research perspectives



Céline Prévost

Psychotech team, IRCCyN Nantes

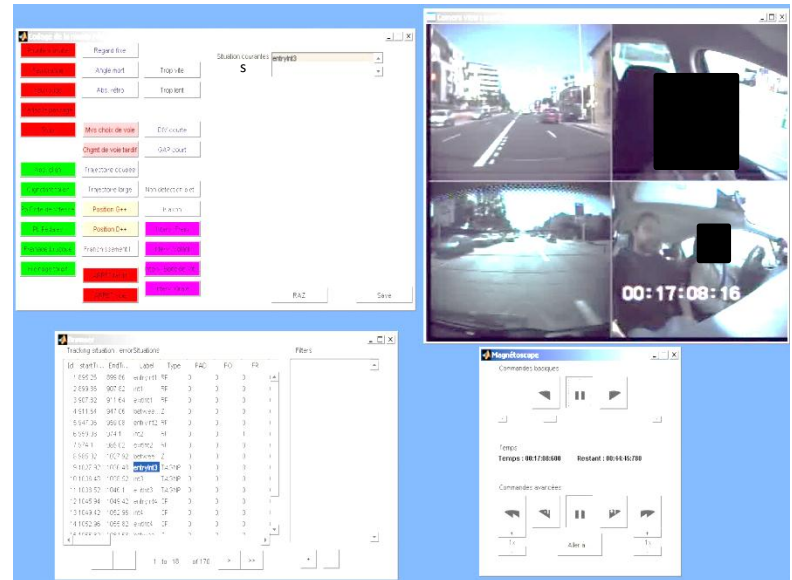
- A research project on cognitive impairment and driving (PhD student)
- A generic discussion on driving assessment issues (through a focus on brain injured persons)
- A mixed research approach using neuropsychological tests and driving activity analysis
- Preliminary results obtained through on road and simulator driving assessments



Maud Ranchet

LESCOT team, Ifsttar Bron

- A research topic on Parkinson's disease effects on car driving
- Three experimental studies with a longitudinal approach
 - Two using the driving simulator
 - One performed on-road



- The first study have shown an updating impairment in patients compared to controls
- The second study (2 years follow-up) showed a mental flexibility decline ; patients declared to have restricted their driving
- The third on-road study (today's talk) refer to an interesting method to identify drivers being at risk of accident (those encountering driving difficulties)

Details on the session organisation



Rules of the game

- 20 to 30 minutes per speaker
- Specific questions after each intervention
- Generic questions at the end of the session

Informations on our preliminary work

- A nod in the direction of Eric Hollnagel
 - A strict respect of the ETTO principle
 - Trade-off between ressources (time and effort) spent on preparing this session by ressources spend on doing it
- ➔ We hope it will be sufficient for an interesting discussion

