Cognitive Systems

F1

2020 edition

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cognitio

PSI 3560 – COGNITIVE SYSTEMS

class F1

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Summary

— First session (7:30 – 9:10)

- Cognitio activities
- Remarks about cognitive science

  - Coffee break

— Second session (9:20 – 11:00)

RECENT ACTIVITIES OF *COGNITIO* MEMBERS @USP

Overview of recent activities and achievements of members of the COGNITIO research group at the University of São Paulo

Extra

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Historical overview

- Cognitio

  – Cognitive Sciences were originally introduced at USP / POLI by Prof. Henrique Schutzer Del Nero

  – Followed from a study/working group he started at Advanced Studies Institute (IEA)

  – Then he moved to POLI Electrical Eng. and brought here this research group as a continuous effort in the area
    - He offered also a graduate course on Cognitive Science in the PhD program of POLI Electrical Eng.

  – The group is called Cognitio.

Universidade de São Paulo
cognitio
Escola Politécnica

HENRIQUE SCHÜTZER DEL NERO

PENSAMENTO, EMOÇÃO E VONTADE NO CÉREBRO HUMANO

O SÍTIO DA MENTE

collegium cognitio
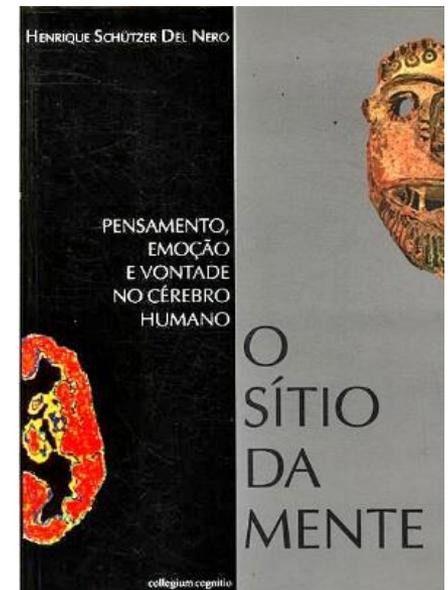
# USP-BMW Project – smart track

- Enhancing driving assistance tools
  - By adding inference techniques to see ahead
  - Neuronal Nets
    - Matching of different information sources to extract regular patterns
    - And then, by forecasting one of them, being able to make inferences about the other
  - Not yet a fully cognitive tool, but evolving in that direction
    - Virtual Driver Assistant with larger and faster access to many different data sources, able to assist the real driver to take better decisions

Recent publications

- Books, Journals

    - Cognitive Science – Recent advances and recurring problems
        - F. Adams, O. Pessoa and J. Kogler, Vernon Press, 2017

    - Cognitive Systems Research – Special issue vol. 43, June 2017
        - J. Kogler and O. Pessoa (guest editors), Elsevier, 2017

    - Annals of the EBICC 2015
        - J. Kogler , O. Pessoa and J. Moraes , SBCC, 2017
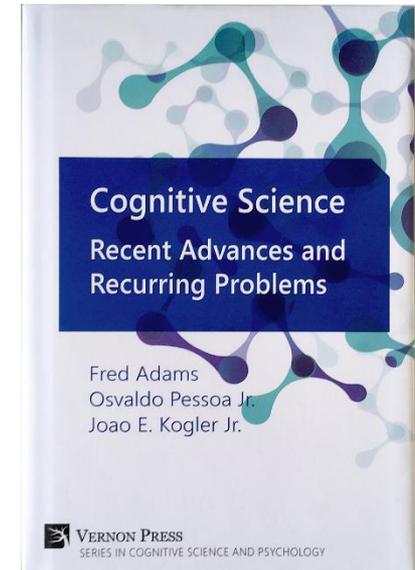
with contributions by
Marcio Lobo Netto,
by other former members
of *COGNITIO*,
and by several USP faculty
members and students.
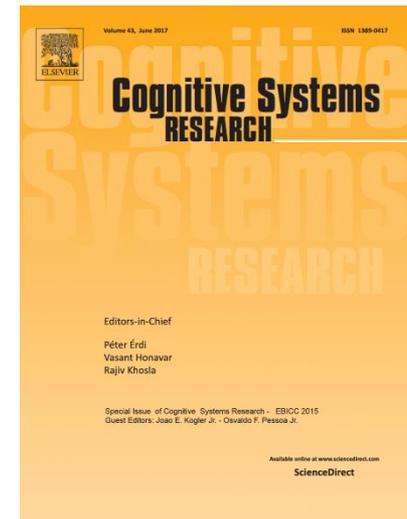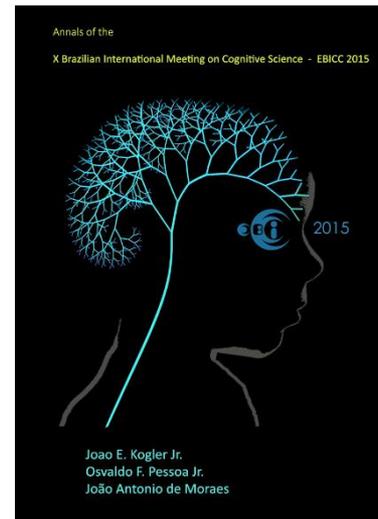
Recent publications

- ## Papers, presentations

  - **Kogler Jr., J.E**. - *Probabilistic models of distributed cognitive processes based on category theory* – Interdisciplinary Colloquium on Probability theory – Meeting on Mathematics, Physics and Philosophy, Institute for Advanced Studies, USP, São Paulo, **2019**
  - **Kogler Jr. J.E**. - *The dynamical coupling of self-organized cognition and action, and its epistemic similarities with Big Data analysis* – Collections of the School of Complex Systems, CLE – Centro de Logica e Epistemologia, Campinas, **2019**
  - **Kogler Jr., J.E**. - *A category-theoretic model of the enactive dynamic coupling between the cognitive self- organized agent and the environment* – Seminarios DECOM / UFVJM – Diamantina, **2019**
  - **Kogler Jr., J.E**. – *Convergent aspects between cognition and big data analysis.* Annals of XII EBICC – International Brazilian Meeting on Cognitive Science – Unicamp, Campinas, **2019**
  - **Kogler Jr., J.E**., **Romanini, A. V.** - *Big Data e Semiótica Peirceana* – Anais do Semiodata 2018, ECA/USP, São Paulo, **2018**

Congress organization

- ***EBICC*** 2015, 2017, 2019
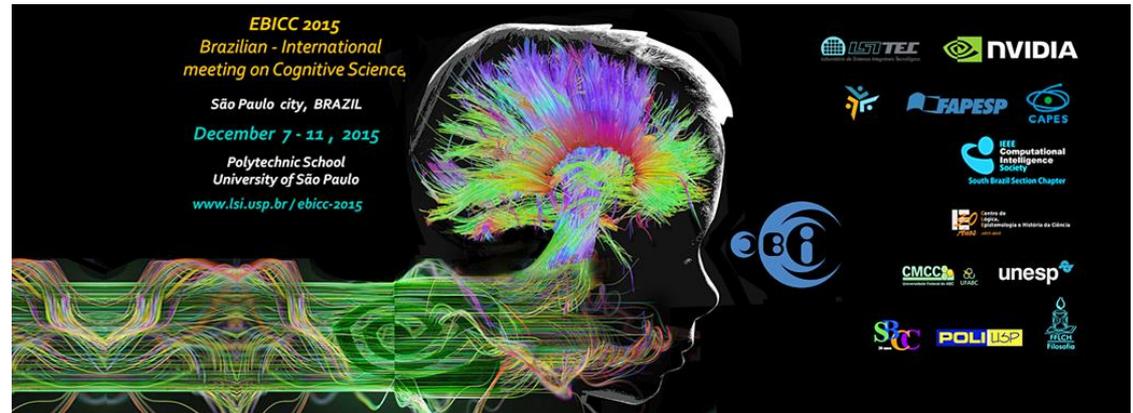
EBICC

- International Brazilian Meeting on Cognitive Science

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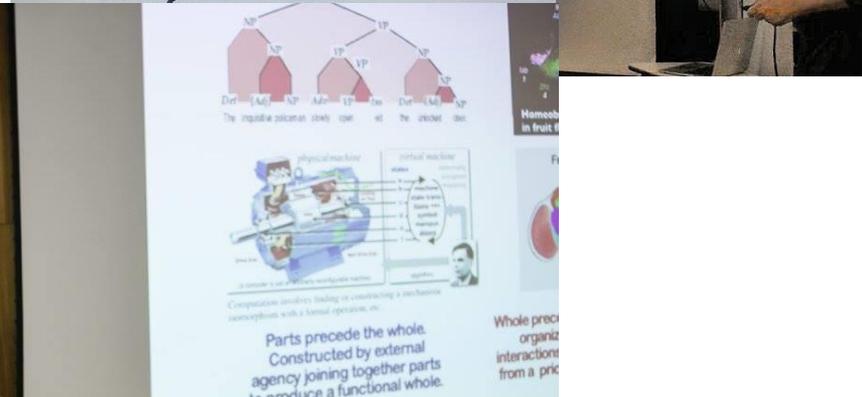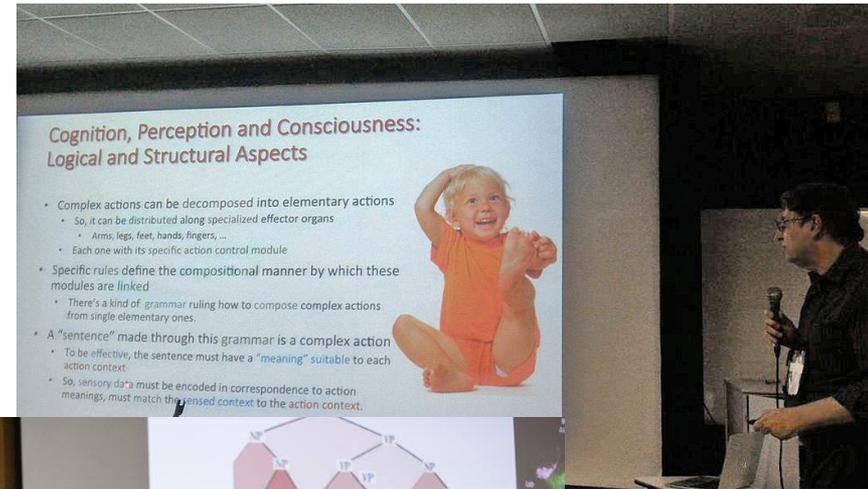
EBICC

- International Brazilian Meeting on Cognitive Science

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EBICC 2019

- October-November 2019
- Unicamp, Campinas
  - Focus on Big data, autonomy, and cognition
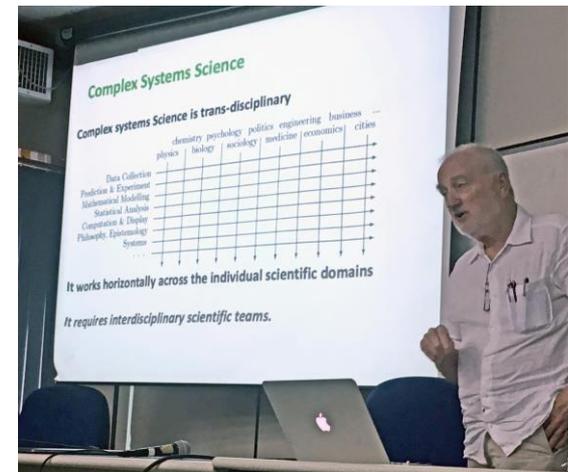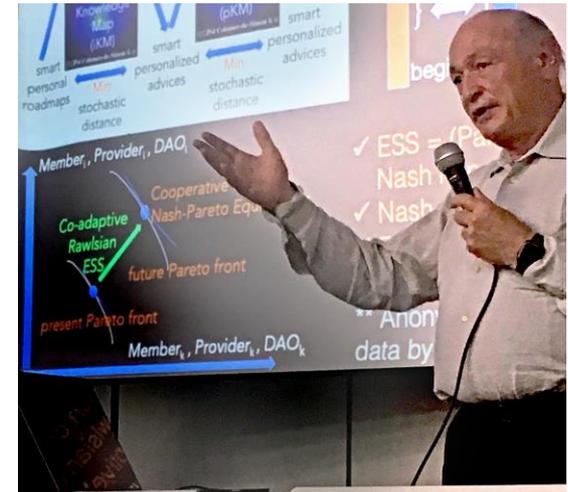
EBICC 2021

- UFVJM – Federal University of Jequitinhonha and Mucuri Valey
  - Focus on Enactive Cognition

REMARKS ABOUT COGNITIVE SCIENCE

Perception, cognition, learning, consciousness, attention, emotions, language, decision making, action planning, etc....

Session F1

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Object of study

- Cognitive Systems and Cognition:

  - The study of
    - cognitive capacities
      - memory, language, attention, learning, inference, reasoning, understanding, consciousness
    - cognitive identity
      - Consciousness as self-awareness – the self and mind
    - What / Why / How
      - Structure, mechanisms, dynamics, implementations (natural and artificial)

Cognitive science
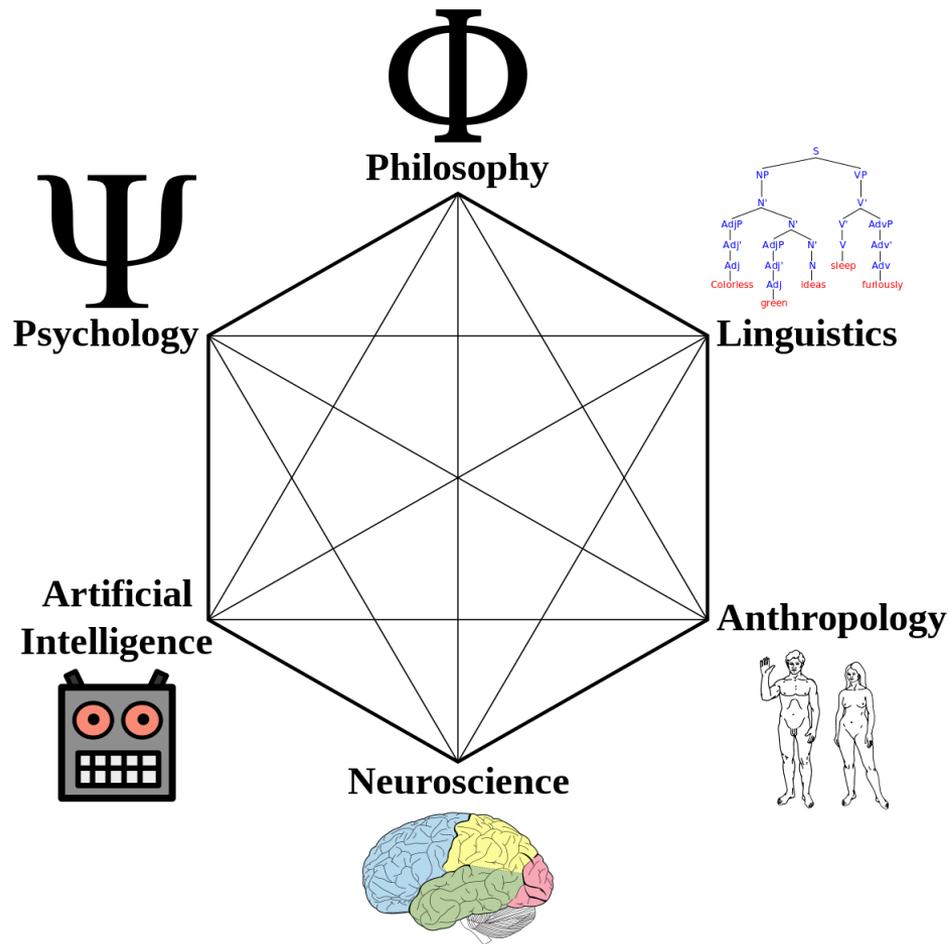
Image credit: Charles Lowe, NASA - Wikimedia

Coffee break

10 minutes