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Research profile: Prof. Trausan-Matu research interests are at the confluence of:

- Natural Language Processing (Discourse Analysis, Text Mining, Sentiment Analysis, Opinion Mining, Analysis of Knowledge Construction in Conversations and in Social Networks, Text Generation, Narration Analysis)
- Artificial Intelligence (Knowledge-Based Systems, Intelligent Tutoring Systems, Intelligent Interfaces)
- Human-Computer Interaction
- Computers and Philosophy
- Music and Computers (Sonification, Music Composition and Analysis with Artificial Intelligence Techniques).

Prof. Trausan-Matu has introduced the Polyphonic Model and Analysis Methodology for discourse, collaboration, learning, and creativity, based on the idea that these activities have essential common points with the polyphonic music. He received the Romanian Academy Award for this contribution. He also developed systems based on the polyphonic model (PolyCAFe, ReaderBench, etc.), Intelligent Tutoring Systems, Knowledge-Based (Expert) Systems.

PhD coordinator from 2008 - 14 thesis completed and defeated;

Scientific publications: 21 books (10 as editor), 40 book chapters and more than 340 peer-reviewed papers (96 ISI WOS indexed; 20 at A rated conferences). 1382 citations in Google Scholar (h-index 20)

Research projects (selection 2006-2016):

- H2020 RAGE — Realising an Applied Gaming Eco-system Romanian, 2015-2019
- EU-FP7 LTfLL – Language Technology for Lifelong Learning, 2008-2011
- Early Nutrition eAcademy Southeast Asia (ENeASEA) ERASMUS+, 2016-2018
- Intelligent systems for conversation analysis - Romanian Academy Research project, 2017-2019
- EU-NCIT - NCIT leading to EU IST excellency (EU-FP6), 2005-2008
- DMKM Erasmus Mundus Master, 2011-2016
- Republic of Letters – COST Action, 2014-2019
- TextLink – COST Action, 2014-2019
- ERRIC – Empowering Romanian Research on Intelligent Information Technologies - EU FP7 Support Action, 2010-2014
- Hub tehnologic inovativ bazat pe modele semantice și calcule de înaltă performanță – HUB-TECH, PNIII, 2016-2018
- Querying Databases in Natural Language Using Deep Learning, PNIII, 2016-2018
- Polyphony, chronotopes and Intertextuality - Romanian Academy Research project, 2013-2015
- K-Teams – Knowledge construction in virtual teams, CNCSIS, 2007-2008
- Dialogic knowledge construction in virtual communities, Romanian Academy Research project, 2005-2009

Chairs and memberships in scientific organizations, committees, and editorial boards:

Vicepresident of the Romanian Chapter of ACM SIGCHI. Member of the Romanian Academy Committee for the History and Philosophy of Science and Technics. Full member of the Romanian Scientists Academy. Chaired and organized international conferences (including rated A*) and participated to the program committee of many others. Member in the editorial boards of international journals.

PhD research themes proposed:

1. Analysis of knowledge constructions in conversations with multiple participants

Detection of content and various features such as involvement, altruism, convergences, divergences, rhythm in conversations (instant messenger – chat, forums, face to face) using natural language processing tools. Applications domains include Computer Supported Collaborative Learning, fostering creativity, analyzing discussions in specific forums or social networks.

2. Discourse analysis using natural language processing tools

Analysis of the coherence and quality of discourse in written texts. Analysis of the rhetorical and polyphonic structures of texts. Analysis of the imaginary and intentional dimensions of texts. Applications for improving text writing, e-learning, text summarization, knowledge extraction, hermenophorical systems, etc.

3. Intelligent sonification of texts, human-computer and group interactions.

The goal is to develop software that generates a musical representation of a text, of a conversation, or a network of interlinked web pages. Applications for the analysis of texts, for generating a sound track for interactive software systems and for entertainment

4. Music composition and analysis using artificial intelligence tools

5. Development of Intelligent Human-Computer Interfaces that consider also aesthetics

6. Detection of links and complex structures in collections of texts using natural language processing tools

The project has as goal to develop a program that identifies links, threads of ideas, and complex structures in collections of texts using natural language processing tools and the polyphonic model.