# Research Topics

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## Innovation Management

My research integrates Large Language Models into Innovation Management, developing and validating data-driven methods to analyse innovation processes, emerging technologies, and skills. A central focus is assessing scientific validity and supporting strategic decision-making in organizational and policy contexts.

## Human Resources Management

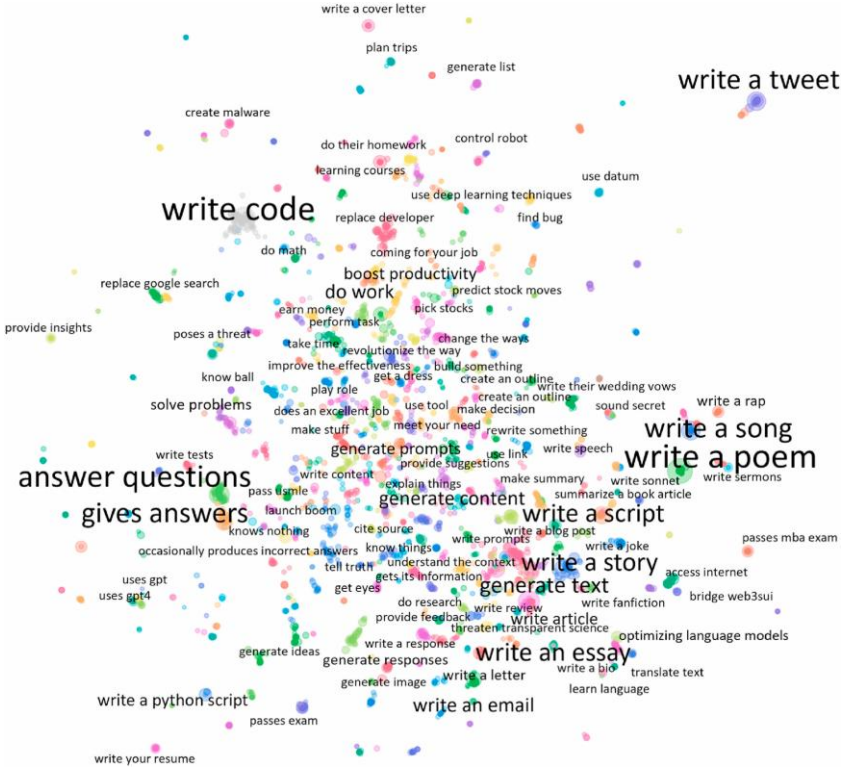
My research develops AI-based methods to support Human Resource Management, focusing on skills mapping, foresight, and training design. Using NLP and Large Language Models on large-scale textual data, it analyses how technological change reshapes skills, informs reskilling strategies, and supports evidence-based education and labour market policies.

## New Product Development

My research develops AI-based methods for New Product Development, integrating Large Language Models, and multimodal AI into managerial practices and product design. It supports problem identification, concept generation, and validation, while embedding intelligent and generative capabilities into digital products and services through close academia–industry collaboration.

# The impact of ChatGPT on human skills: A quantitative study on twitter data

- **Obejective:** The study aims to quantitatively investigate how Large Language Models impacts human skills and how users perceive these impacts, addressing which skills are affected and whether user reactions are positive or negative.
- **Approach:** It applies text analysis techniques to over 600,000 Twitter posts, extracting tasks requested by users to ChatGPT, mapping them to ESCO skills via semantic similarity, and analysing user sentiment toward the impacted skills.
- **Key findings:** Large Language Models affects a wide range of skills across STEM and humanities (185 skills linked to 408 tasks), especially writing, creativity, and programming. User reactions are predominantly positive, and four new skills emerge as critical for effective human–AI interaction (task definition, prompting, AI literacy, and performance evaluation).




*Giordano, V., Spada, I., Chiarello, F., & Fantoni, G. (2024). The impact of ChatGPT on human skills: A quantitative study on twitter data. Technological Forecasting and Social Change, 203, 123389.*

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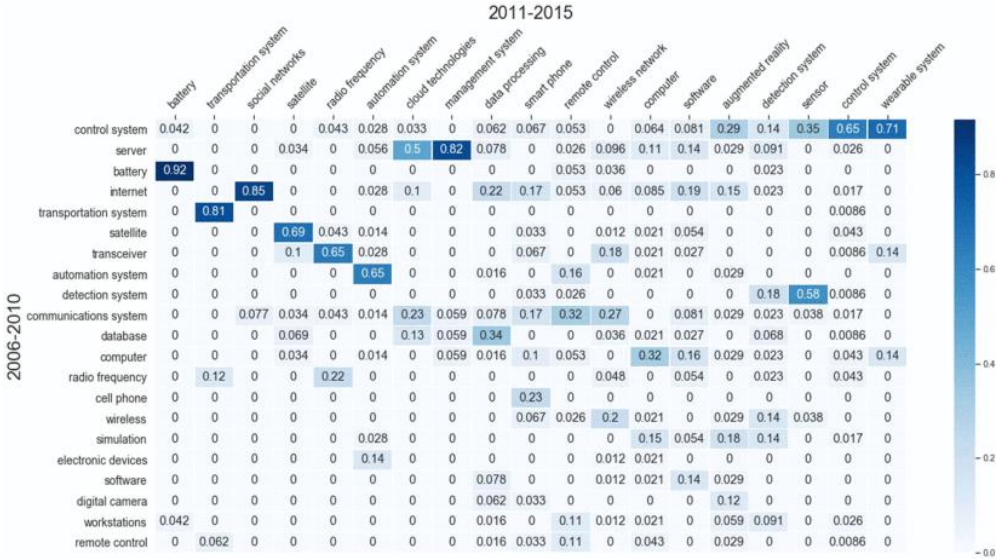
# Text and Dynamic Network Analysis for Measuring Technological Convergence: A Case Study on Defense Patent Data

- **Obejective:** The paper aims to develop and test a novel, data-driven method to identify and measure technological convergence over time, addressing the limits of traditional patent classification and citation-based approaches, with an application to the defense-related C4ISTAR domain
- **Approach:** It combines Natural Language Processing and dynamic network analysis by automatically extracting technologies from heterogeneous texts, retrieving them in over 300,000 defense patents, building time-varying co-occurrence networks, and measuring convergence through merging and splitting patterns of technology clusters.
- **Key findings:** The study reveals strong and growing technological convergence in the defense sector, driven mainly by digitalization and civilian–military technology recombination.




*Giordano, V., Chiarello, F., Melluso, N., Fantoni, G., & Bonaccorsi, A. (2021). Text and dynamic network analysis for measuring technological convergence: A case study on defense patent data. IEEE Transactions on Engineering Management, 70(4), 1490-1503.*

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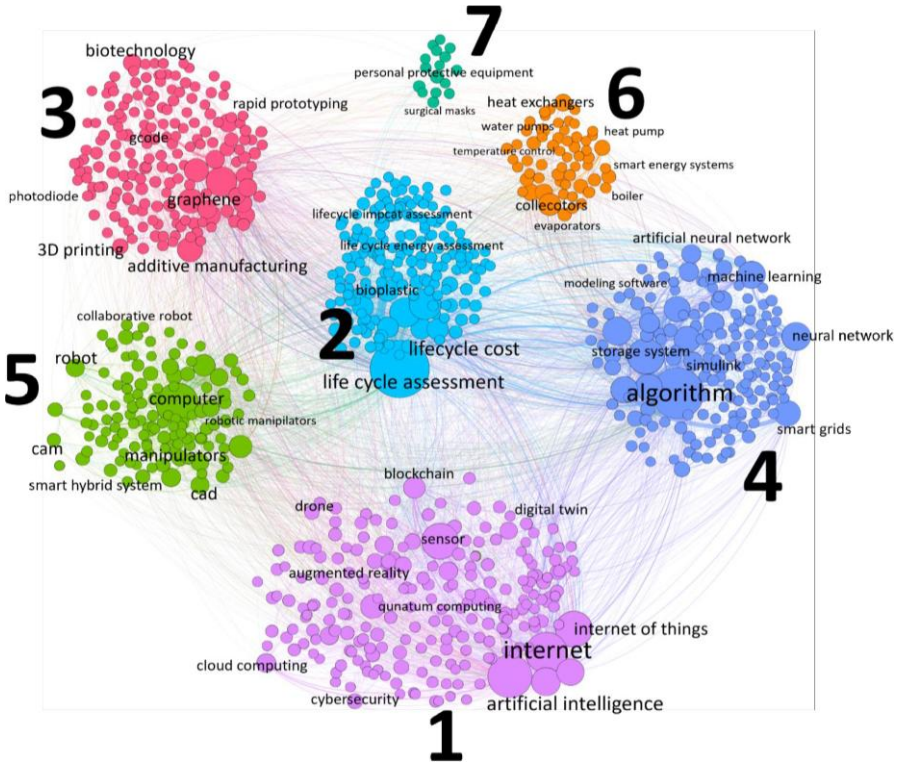
# Identifying technologies in circular economy paradigm through text mining on scientific literature

- **Objective:** Map and analyse the technological landscape of the Circular Economy using advanced text analysis techniques, identifying emerging technologies, key technological domains.
- **Approach:** Data-driven approach based on advanced Natural Language Processing. It analyses over 45,000 scientific publications to automatically identify technologies, track their evolution over time, and map technological domains and interconnections through network analysis (see figure).
- **Key findings:** The study finds a strong emphasis on emerging digital technologies in Circular Economy research, alongside growing attention to lifecycle assessment and biomaterials. It identifies seven distinct technological domains and highlights key benefits and challenges of technology adoption.




*Giordano, V., Castagnoli, A., Pecorini, I., & Chiarello, F. (2024). Identifying technologies in circular economy paradigm through text mining on scientific literature. PLoS One, 19(12), e0312709.*

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**Vito Giordano** is the **Vice-Director of the DETAILLs Lab**. The lab was established within the Erasmus+ DETAILLs project and focuses on the use of **Generative Artificial Intelligence** for **designing sustainable products** through Living Labs.

It brings together students, researchers, and companies to co-design innovative solutions for real-world sustainability challenges, combining education, experimentation, and territorial impact.