



Transforming Europe Through Doctoral Talent and Skills Recognition

Aur  a Cophignon, PhD

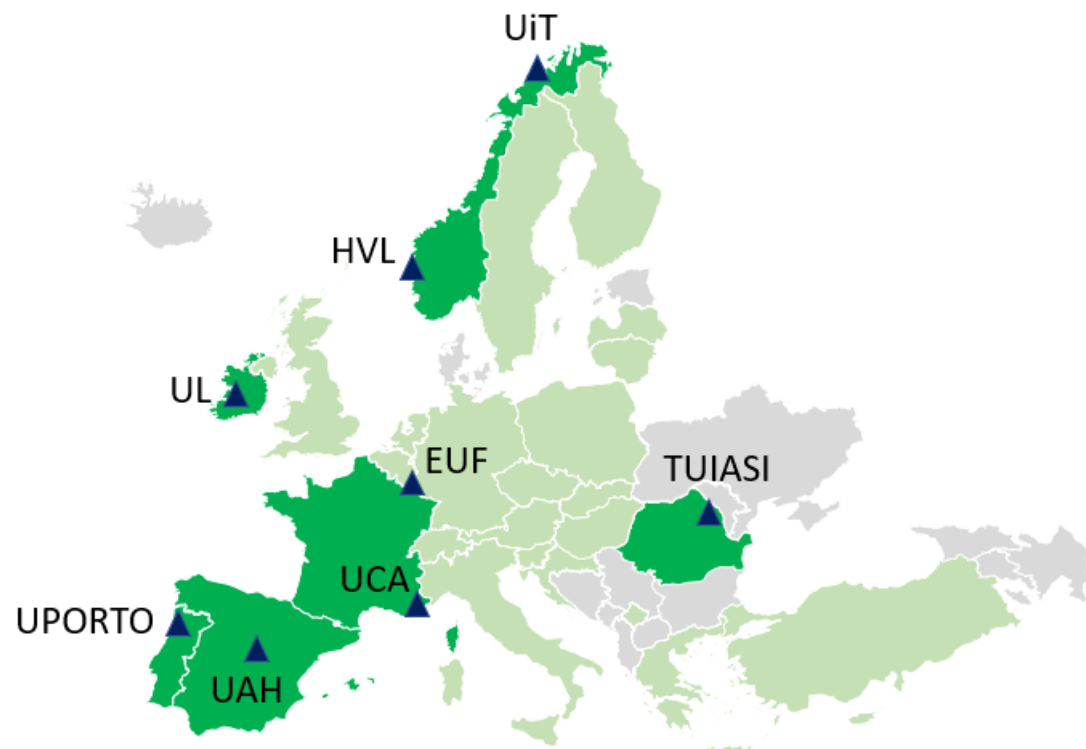
Project Coordinator

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About DocTalent4EU



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€ 1 584 587,50

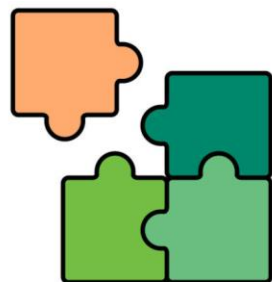
EU contribution

€ 1 584 585,00



The challenge: PhD employability and society

Mismatch



Skills gap between doctoral training and industry needs.

Underutilization



PhD holders' skills often unrecognized by employers.

Limited Support



Insufficient career development for PhDs outside academia.



Project Objectives

1 Skills Intelligence

AI-driven system to predict in-demand skills.

2 Curriculum

Modular, interdisciplinary, and industry-focused training.

3 Digital Credentials

Recognizing skills with digital badges for better visibility.

4 Talent Centers

Career support hubs with industry partnerships.

Predicting in-demand skills: machine learning system

Article

Hierarchical Classification of Transversal Skills in Job Advertisements Based on Sentence Embeddings

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Abstract: This paper proposes a classification methodology aimed at identifying correlations between job ad requirements and transversal skill sets, with a focus on predicting the necessary skills for individual job descriptions using a deep learning model. The approach involves data collection, preprocessing, and labeling using ESCO (European Skills, Competences, and Occupations) taxonomy. Hierarchical classification and multi-label strategies are used for skill identification, while augmentation techniques address data imbalance, enhancing model robustness. A comparison between results obtained with English-specific and multi-language sentence embedding models reveals close accuracy. The experimental case studies detail neural network configurations, hyperparameters, and cross-validation results, highlighting the efficacy of the hierarchical approach and the suitability of the multi-language model for the diverse European job market. Thus, a new approach is proposed for the hierarchical classification of transversal skills from job ads.

Article

Techniques for Transversal Skill Classification and Relevant Keyword Extraction from Job Advertisements

Marius Gavrilescu ¹, Florin Leon ¹ and Alina-Adriana Minea ^{2,*}

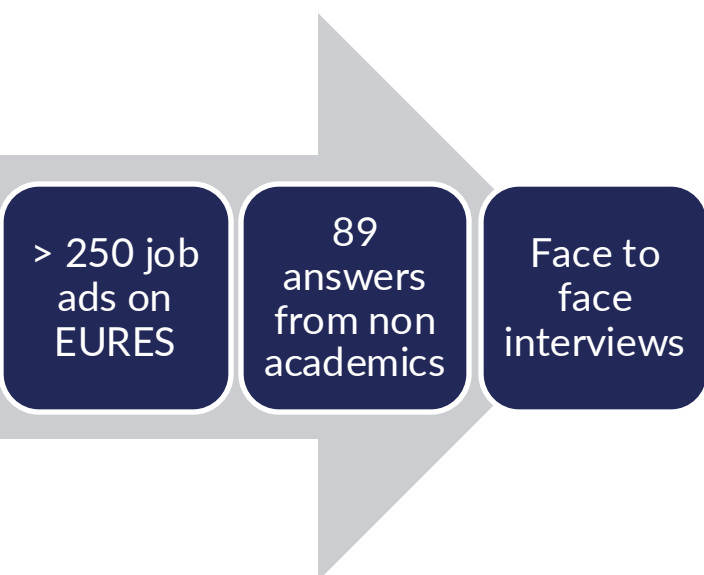
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Abstract: The recognition of transversal skills from job ads is important for ensuring a proper match between potential candidates and the requirements formulated in job ad texts. We contribute to understanding and interpreting job ad phrasings in two significant ways: firstly, we propose neural network-based classification models for the recognition of the six fundamental transversal skills formulated within the European Skills, Competences, Qualifications, and Occupations (ESCO) platform; secondly, we develop a means of identifying meaningful terms relevant to each transversal skill class, using feature importance-scoring methods that highlight the relevance of the words for recognizing each transversal skill. The resulting pipeline allows for the identification of skills in job ad texts, as well as the highlighting of important key terms for each recognized skill, therefore contributing to a better understanding of the skill taxonomy as well as the correlation of the related skill base with the corresponding formulations from job ads.

Identifying the most needed transferable skills



ESCO	Research Comp
T1.1 - mastering languages	/
T1.3 - working with digital devices and applications	Operate open resource software
T3.1 - working efficiently	Plan self-organisation; Show entrepreneurial spirit ?
T3.2 - taking a proactive approach	Manage personal professional development; Evaluate research
T3.3 - maintaining a positive attitude	Cope with pressure
T3.4 - demonstrating willingness to learn	/
T4.2 - supporting others	Ensuring wellbeing at work
T4.4 - leading others	Build mentor-mentee relationships

Tools and services

**Interdisciplinary
courses**

**DocTalent4EU digital
credentials**

**Local Talent
Management Centers**

Interdisciplinary courses

	Transferable skills addressed		
Course	ESCO	Research Comp	Recognition system
Communication and Negotiation	T1.3 ^{1,3} , T2.1 ^{1,2} , T2.2 ¹ , T2.3 ^{1,2} , T2.4 ¹ , T3.1 ^{2,3} , T3.2 ^{2,3} , T3.3 ³ , T3.4 ^{1,2,3} , T4.1 ^{1,2} , T4.2 ^{2,3} , T4.3 ^{1,2} , T4.4 ^{2,3} , T6.3, T6.4, T6.5, T6.6	Managing research; Doing research; Cognitive abilities; Self-management; Working with others; Making an impact; Managing Research tools	Module I (MOOC): 1 Open badge (ULIM+UCA) Module II+Module III: 2 European Digital Credentials for learning (UCA/ULIM)
Teamworking and Networking	T1.1 ^{1,3} , T1.3 ^{1,2} , T3.1 ^{2,3} , T3.2 ^{2,3} , T3.3 ³ , T3.4 ^{1,2,3} , T4.1 ^{1,2} , T4.2 ^{2,3}	Managing research; Doing research; Cognitive abilities; Self-management; Working with others	2 European Digital Credentials for learning (UAH/UiT)
Personal effectiveness and Leadership	T1.1 ^{1,3} , T1.3 ^{1,2} , T3.2 ^{2,3} , T3.3 ³ , T4.2 ^{2,3} , T4.4 ^{2,3}	Cognitive abilities; Self-management; Working with others; Making an impact	2 European Digital Credentials for learning (UAH/UPORTO)

¹ = Top 10 from employers' survey,
² = Top 10 from job ads,
³ = Most demanded and not significantly provided yet by the consortium.

Digital credentials

Recognizing and promoting doctoral candidates' transferable skills

✓ Open Badge
+60 issued



✓ European Digital Credentials



+120 issued

Local Talent Management Centers

+200 PhD candidates enrolled (from all the fields)



Career strategy



Career Development

Guidance and resources for PhDs.



Training Support

Upskilling and reskilling opportunities.



Industry Collaboration

Connections with non-academic sectors.

DocTalent Center at UniCA

- Desinging the training programme for several pathways

International
Academic
Career

R&D in Industry

Career in
international
Organizations and
NGOs

Research
Management
and Innovation

Consulting &
Expertise

Entrepreneurship
and Research
valorization

Science and
Society

"International Academic Career" Track

Track Description:

This track supports doctoral candidates aiming for a career in academic research, whether in France or abroad. It provides insights into the requirements of academic careers, publication strategies, research project development, and international mobility opportunities. The training sessions will cover essential steps: preparing an academic application package, strategies for securing postdoctoral funding, and integrating into international scientific networks.

Doctoral Training Hours: Minimum 50 hours to choose within the package.

Skills Acquired or Developed:

- Understanding the structure and functioning of academic systems in Europe and worldwide
- Developing a publication strategy and enhancing research impact
- Preparing an application package for academic positions (CV, cover letter, research proposal)
- Identifying and applying for postdoctoral funding and international research grants
- Expanding one's academic network and participating in international collaborations
- Showcasing research experience in a competitive academic environment

Milestones to Validate for European Certification: milestones 1 and 2 only?

- **Milestone 1:** Designing a career plan
- **Milestone 2:** Completing the training track
- **Milestone 3:** Completing an international mobility of at least two months during the Master's or Doctorate
- **Milestone 4:** Presenting research results at one or two international conferences
- **Milestone 5:** Publishing in a Q1 or Q2 journal and/or publishing in collaboration with an external research laboratory
- **Milestone 6:** Being an active member of an international scientific network, a PhD candidate representative, or president of a doctoral association
- **Milestone 7:** Winning a scientific award

Bonus "Open Badges":

- **International Academic Career - Expert Level 1:** Milestone 1 and 2 + any 2 additional milestones
- **International Academic Career - Expert Level 2:** Milestone 1 and 2 + any 3 additional milestones
- **International Academic Career - Expert Level 3:** Milestone 1 and 2 + any 4 additional milestones

DocTalent Center at UniCA

1st year:

Identify your professional goals

Better understand key skills to develop

Design a training plan aligned with your career plan

2nd year:

a skills assessment to review your professional goals, identifying the skills you have acquired and those to strengthen, adapting your training plan to align with your ambitions and opportunities.

3rd year:

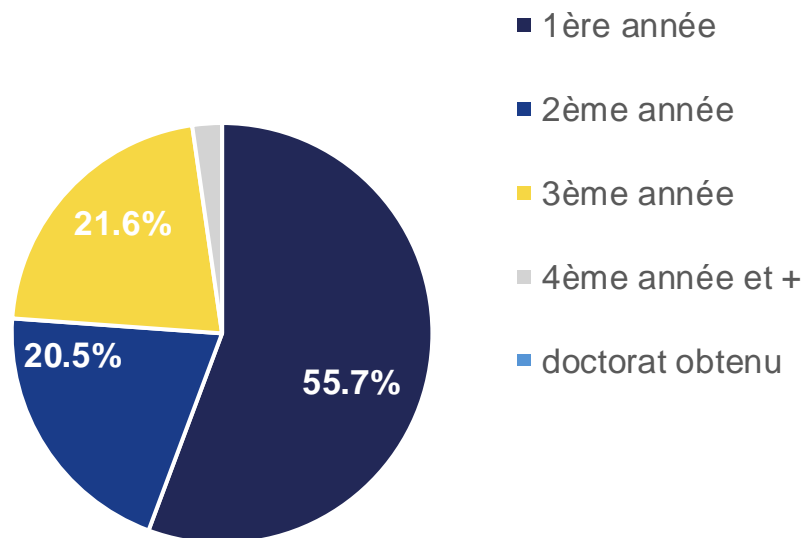
conduct an in-depth skills assessment,
define an effective strategy for your job search,
receive personalized advice for crafting your CV,
prepare for job interviews.



DocTalent Center at UniCA

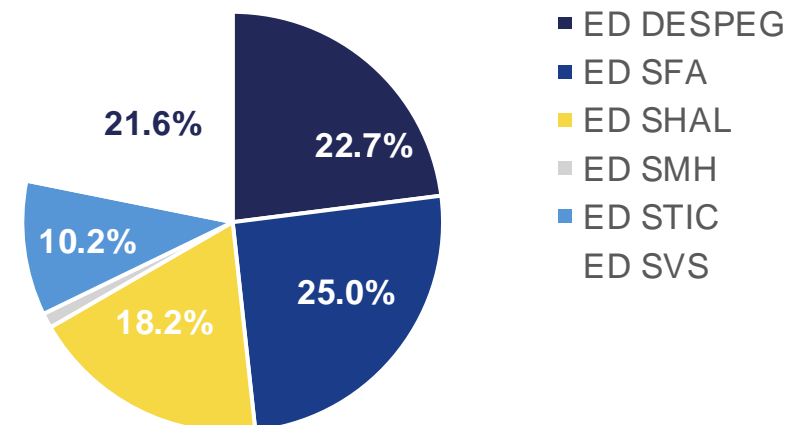
Year of PhD

86 answers



Doctoral School

86 answers





Next steps

Disseminate findings and promote the adoption of the DocTalent4EU model across Europe to enhance PhD employability, bridge academia-industry gaps, and address policy challenges.



At least 40 others European HEIs using DocTalent4EU project results to develop/improve local talent management centers for ECRs

Contact our team!



<https://doctalent4eu.eu/>

<https://www.linkedin.com/company/doctalent4eu>

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EUF
EUROPEAN
UNIVERSITY
FOUNDATION



"Gheorghe Asachi"
Technical University of Iasi
Romania



Universidad
de Alcalá



U.PORTO



UiT The Arctic
University of Norway



Western Norway
University of
Applied Sciences

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