

What is it like to be a UX designer in Italy? An initial analysis of job advertisements to improve training and education in HCI

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This paper analyzes the Italian job market of UX designers through a qualitative analysis of 100 randomly selected job announcements. We employed a deep qualitative analysis for extrapolating the dimensions that characterize the professional figure of a UX designer. Our analysis reveals as the UX designer is considered a technical figure closer but often distinct from the professional figure of the front-end software developer. Although software development competence is still required in some cases, in several others, the core aspects of User-Centred Design seem to be correctly understood, and the required competencies and skills denote a relatively high UX maturity. On the other hand, the request for more straightforward web design is still high, and the UX designer's role often overlaps (or it is confused) with the role of the graphical designer. Furthermore, the Italian companies seem not yet ready to catch the strategic role that UX can play in aligning with business and marketing areas. Although our main objective for this study was to assess and align academic training for UX designers, we believe that it might also be the basis to better advocate the UX design profession to companies.

CCS Concepts: • **Human-centered computing** → **HCI theory, concepts and models**.

Additional Key Words and Phrases: UX competencies, UX and industry

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1 INTRODUCTION

In the field of HCI, there is a long-standing debate about education in HCI. Nevertheless, the attention toward the industry is usually focused on providing compelling cases to transfer HCI/UX approaches into the professional world [1, 11] rather than investigating the needs of companies in a regional market. In this work, we took a different approach. In this work, we tried to analyze the job market in a specific geographical area through a qualitative analysis of 100 randomly selected job announcements. Although limited in the sample analyzed, we employ a deep qualitative analysis for extrapolating the dimensions that characterize the professional figure of a UX designer in the Italian job market. Our study aimed to shed some light on understanding UX design practices in industries in the local Italian context with the goal of better tuning the bachelor and master programs in HCI at the University of Trento.

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2 RELATED WORKS

In recent years, there have been several proposals to improve HCI education. Notably, the EduCHI workshop series [15–17] started in 2018, is a forum for discussion among HCI educators for HCI curricula and teaching experiences to build and maintain a community of practice [14]. The workshop series focuses on core competencies and novel approaches. However, there have been few discussions about industry needs. The needs expressed by industry are seldom explored, although there are some notable exceptions. Gray [8] presents a 12-week longitudinal study to investigate the transitions from internships to full positions. Gray [9] discusses an interview-based study conducted with practitioners in various companies to understand baseline methodological competencies required by the industry. Björklund and colleagues [2] explored the designers' narratives in a design studio by analyzing the narratives in 38 interviews. Lauer and Brumberger [10] analyzed 1,000 job ads in the US industry, collected in the fall of 2013 and performed a quantitative analysis based on automatically extracted patterns. Wang and colleagues [18] analyzed 190 job ads for requirements engineers in Canada. It is worth noting that all those studies are necessarily contextualized in a specific geographical area because of language issues and the need to consider the UX maturity of specific regional markets [7].

3 DATA COLLECTION AND ANALYSIS

The job advertisements have been downloaded from three major recruitment sites active in Italy. The searches were done in October 2020 using the keywords “UX designer”, “UI Designer”, “interfacce” and “interaction design”. Among the over 300 results, 100 advertisements in Italian have been randomly extracted by paying attention to avoid duplicate postings. Each advertisement has been anonymized, and all sentences have been extracted and individually coded, as explained below. Eventually, 884 sentences have been coded with 1 to 5 codes (with an average of 1.4). Fifty-two (52) sentences in 36 advertisements have not been coded because out of context (e.g. knowledge of English language) or requests for tools specific to the domain (for example, game engines) or too generic (e.g. knowledge of the “main browsers”). At the end of the analysis, the codes for each advertisement have been collected and duplicates have been removed.

The data (consisting of the individual sentences of each job advertisement) has been analyzed using a thematic approach [3] following the procedure suggested by Nowell and colleagues [13]. Specifically, for the first 50 job advertisements, an inductive coding approach has been used, followed by a deductive approach for the remaining 50 ones as suggested by [6]. The coding has been done iteratively by both authors with frequent researcher triangulation. In a final stage, the codes have been grouped in thematic clusters representing the groups of competencies and skills required by UX designers. In discussing the coding, our research question was to analyze and pinpoint relevant elements, to assess the education offer. Eventually, 28 codes and 10 thematic clusters, discussed in details below, have been identified.

Theme “UI Design”. It appears in 88 job announcements and, overall, the competencies related to the theme of UI design are the most common. It includes 3 codes: “*UI design knowledge*”, “*Guidelines and standards*” and “*Web design*”. The “*UI design knowledge*” code appears in 80 different job announcements. It includes aspects like the design of the visual and interactive aspects of graphical user interfaces and the flows of interaction, and the knowledge of the patterns of interaction. The “*Guidelines & standards*” code appears in 39 job announcements. It mainly describes specific competencies like the knowledge of concepts like usability (which is considered different from the competence of conducting usability tests, see below), the knowledge of commons design guidelines and design libraries. The “*Web design*” code appears in 14 job announcements. It describes specific competencies and skills on web design, including

Thematic competence	Description	Frequency
UI design	understanding the principles of GUI design, recognizing patterns, using and creating guidelines and design systems, organizing flows, web design, copywriting	88%
UX design	understanding of UCD methodology & methods, knowledge of design process, understanding of user stories, information architecture, Design Thinking and Service Design	78%
Prototyping	prototyping skills and knowledge of prototyping tools, wireframing, hf and lf prototypes	77%
Visual and graphics	visual skills, drawing skills, understanding of vector graphics, ability to compose icons, animations, export assets for different platforms, knowledge of common platforms	65%
Programming	knowledge of different programming languages for front-end programming and web-based frameworks, knowledge of HTML, CSS and similar	56%
User involvement	skills on user involvement (interviews, focus groups, ...), user studies design and execution, user requirements analysis, quantitative and qualitative data analysis for design; knowledge of specific tools likes for data collection and analysis;	53%
Marketing & communication	understanding of marketing concepts (SEO, DEM, ...), knowledge of social networks, skills in presentations and storytelling, use of presentation tools	31%
Project skills	experience in specific processes (Agile, ...), knowledge of project management tools and concepts (KPI, ...)	26%
Soft skills	communication inside the team, problem solving skills, teamwork	21%
Business analysis	understanding of business indicators, benchmarking analysis	9%

Fig. 1. The 10 thematic clusters emerged from the analysis.

understanding specific concepts like “landing page” and “responsiveness” and the knowledge of specific tools such as content management tools. In this theme, we aimed to keep separate web designing competencies to the more general (and possibly overlapping) competence of UI design. The primary motivation is to assess how much web design is still considered a valuable competence for the job market. In this respect, in only two cases, other general aspects of UI design knowledge are not mentioned together with web design: graphical skills and web programming skills are also mentioned in both cases. In 8 of the 14 cases, UX design (as a theme) is not mentioned.

Theme “UX Design”. This theme appears in 78 job announcements, and it is the second most frequent code. As for the previous theme, we have decided to separate the general competencies about UX design from the more specific categories. Therefore, it includes 5 codes: “UX design knowledge”, “Information Architecture”, “Service Design”, “Design Thinking”, and “Design communication”. The “UX design knowledge” code considers the requests about understanding the methodology of UCD and its main methods and techniques. It has been coded 58 times, and in 28 cases, it appears without the other 3 more specific ones. The “Information Architecture” has been coded only in the specific cases in which aspects of the organization and content presentation. We wanted to keep it separated because of this discipline’s historical importance [23]. It appears 25 times, and it does not co-occur with the more general code “UX design knowledge” in 13 cases (52%). Similarly, “Service Design” has been coded only in the cases in which specific concepts of this discipline are mentioned. This code appears in 18 job announcements and it does not co-occur with “UX design knowledge” in only 8 cases (44%). “Design Thinking” has been coded only in the case in which the term is explicitly mentioned in a job announcement. It appears 25 times and it does not co-occur with “UX design knowledge” in 8 cases (32%). Finally, we coded as “design communication” those instances of the communication skill that are clearly related to the communication of the design outcomes to the developers (for example, “producing design documentation in terms of page models, process models and navigation models” or “creation of operative documents with specifications useful for the developers”). Although this code appears only 6 times, it has been useful to differentiate this goal of communication by different purposes of the same skill.

Theme “Prototyping”. We decided to keep the prototyping topic separated because, although prototyping is an essential skill in UX design, students can be trained in prototyping relatively independently from the other competencies.

This theme appears in 77 job announcements, and it is as much as frequent as the “*UX design*” theme. We decided to code separately the cases in which competencies of prototyping are mentioned (for example when asked for competences on “designing prototypical solutions”, “designing functional prototypes”, “implementing interactive prototypes that illustrate how the user interface works”) from the cases in which an explicit reference to required skills on using specific commercial tools. The former code, “*prototyping skills*” appears 51 times while the latter “*prototyping tools*” appears 56 times. In 21 cases, there are no specific tools required (announcements coded with “*prototyping skills*” without “*prototyping tools*”), and in 26 cases, there is a reference to specific tools without explicit mentioning of general skills and competences of prototyping.

Theme “Visual and graphics”. We decided to separate the theme of “*Visual and graphics*” from the more general theme of “*UI knowledge*” with a similar motivation than above. As we defined it, “*Visual and graphics*” includes the competencies and skills of graphical design, the references on drawings skills, and the ability to compose icons, animations, and create and export graphical assets for the different platforms. The theme appears in 65 job announcements. As for prototyping, we decided to code the requests for competences and skills separately from the requests to knowledge of specific commercial tools. The “*visual skills*” code appears 33 times, while the “*graphics tools*” code appears 54 times. Only for 11 cases (33%), the request for competences and skills is not accompanied by the requests of one or more specific tools. While in 32 cases (59%), the request is for a specific tool without further explanations.

Theme “User involvement”. Again, the theme “*User involvement*” is kept separate from the more general “*UX knowledge*” for the reasons discussed above. It includes the competencies and skills required to involve the users either in the initial phases of requirements or needs elicitation and in the evaluation of the design outcomes. It appears in 53 job announcements. It comprises 4 codes: “*user research skills*”, “*user requirements*”, “*user studies*”, “*data analysis*”. The “*user research skills*” code specifies competencies and skills related to user needs elicitation using interviews, focus groups. It appears 21 times. The code “*user requirements*” is used only when this term is explicitly used. It appears 11 times and in 9 cases (82%) does not co-occur with the “*user research skills*” code. “*User studies*” codes the requests of competencies and skills for user evaluation of interfaces (for example, with the occurrence of terms like “design of protocols”, “A/B tests” and similar ones). The code appears 34 times, and it occurs with either “*user research skills*” or “*user requirements*” in 17 cases (50%). We decided to code the term usability as “*user studies*” if the context clarifies that it involves users tests (for example, “evaluation of the usability of interfaces”) while it is coded as “*guidelines and standard*” if it refers to the knowledge about how to design usable interfaces. Finally, the “*data analysis*” code has been used when data from the users’ studies or evaluation is explicitly mentioned as a competence toward the design. It appears in 21 job announcements. It does not co-occurs with the other codes of the same theme in only 6 cases. In 5 of them, it is in the context of UX design (usually together with the “Design Thinking” code) while the 1 case it appears in the context of UI design, and it co-occurs with other technical codes such as web and front-end programming (therefore, we a possibly different meaning). **Theme “Programming”.** Since there is a long debate about the need for programming skills by UX designers (see for example [5]), we decided to analyze the requests for coding skills with the theme “*Programming*” which appears in 56 job announcements. We decided to code separately the requests for web programming (specifically, knowledge of HTML and CSS) from the other types of programming (such as knowing several JavaScript frameworks or other languages) because we hypothesized that the former might be more related to web design. Indeed, the “*web programming*” code is more frequent (49 cases) than the “*front-end programming*” (21 cases). Furthermore, the latter does not co-occur with the former in 7 cases only. Nevertheless, the “*web programming*” code co-occurs with the “*web design*” code in 8 cases only (16%).

Theme “Marketing & communication”. This theme includes competencies and skills related to the domain of marketing, and it includes some marketing concepts in the field of the web (SEO, DEM, ...) and the capacity of managing social networks campaigns (coded together as “*marketing knowledge*”) as well as the communication skills to present ideas to stakeholders and customers (coded as “*communication skills*” or “*presentation tools*”, where, in the latter, some knowledge about a specific commercial tool is required). It appears in only one-third of the job announcements (31 occurrences). The “*marketing knowledge*” code appears in 23 job announcements. The “*communication skills*” code and “*presentation tools*” code appear 11 and 12 times, respectively (5 times together).

Theme “Business analysis”. It refers to the requests of understanding business needs and business requirements and the ability to translate them into design opportunities as well as to monitor and track competitors. It appears only in 9 job announcements. The “*business requirements*” code covers the former aspects of understanding and related to business needs. It appears in only 1 job announcement. While the “*benchmarking*” code appeared in 9.

Theme “Project skills”. This theme refers to understanding work in a project context, including the experience with different workflows (such as Agile), the knowledge of the terminology (KPI, ...), and the knowledge of commercial tools. These aspects appear in 26 job offers. We separately coded the requests for knowledge about these aspects (“*experience in project*”, which appears 17 times) and the request for project management experience (“*project management*”, which appears 10 times).

Theme “Soft skills”. Finally, we tracked the requirements for soft skills, which consider teamwork (including the soft skill of communication among peers) and explicit mentions to problem-solving skills. Overall, the theme appears in 21 job announcements. The “*teamwork and communication*” code appears 15 times while the “*problem solving*” code appears 10 times.

4 DISCUSSION

We are aware that the proposed theme classification can be regarded as arbitrary. For example, “*UX design*” might be considered not at the same level of abstraction with respect to “*Prototyping*”, since the former includes the latter. Nevertheless, in defining the themes, we were guided by the general goal of providing analysis to refine the training on UX design.

The distinction between UX and UI appears to be still relevant since 71% of the cases in which UI design competencies are required are not associated with UX competencies. That may suggest that the UX maturity in the Italian job market is still relatively low. Programming seems a valuable skill for UX designers ([5]), though for just half of the job announcements. It seems related to the “*UI design*” theme more than with the “*UX design*”, and it often co-occurs with prototyping. As might be expected, visual and graphical skills are more connected with UI design; and programming too. Furthermore, programming seems to be more related to UI design, prototyping, and visual skills, possibly suggesting that, in several cases, the UX designer role overlaps with the professional figure of front-end developer and graphical designer. Web programming competencies (knowledge of HTML and CSS) are more requested than other types of programming. However, they seem to be relatively differentiated from web design competencies (which in our analysis comprises knowledge about non-programming tools such as content management tools). Indeed, web design is still often mentioned as a relevant skill, although it is required as a specific aspect of UI design in the majority of cases. Nevertheless, in over half of the cases, it is also related to UX competencies. On the other hand, web design and web programming are often associated. The prototyping skills seem very relevant since that theme appears very often in the context of all other themes. Yet, the theme itself co-occurs mainly with UI design and UX design, with a little more emphasis in the former. Among the different skills and competencies, the ones referring to the definition of the user

interface appears to be the most sought for. Nevertheless, the Italian job market seems to become more mature, and explicit references to Design Thinking or specific aspects related to Information Architecture and Service Design are frequent. While users' involvement in the design process seems to be still less in demand by the industry, it is interesting to note that it appears in half of the job announcements (although, in 11 cases with the engineering perspective of "user requirements"). It is worth noting as the term usability does not always refer to the need for user evaluation. As it might be expected for the Italian industry, whose job market is predominantly composed of small and very small companies, the emphasis on industrial process and procedures is not frequent (less than 1 in 5 job announcements) and even less about project management (1 in 10). A little more frequent is the need for soft skills for teamwork (1 in 5 job announcements). Although half of the announcements do not require programming skills, UX design seems still related to software production. Indeed, business and marketing areas might benefit from better integration with UX processes (for example, [11;13]). In the Italian UX job market, it seems that the convergence toward the marketing practices starts to be recognized while the integration within the business unit is still less explored. Finally, communication is a critical and often mentioned skill for UX designers. Our analysis suggests that it is relevant in three different aspects: communication as a form of soft skill in teamwork, communication as a marketing skill to interact with stakeholders, and communication as part of the design process to inform developers about (or to negotiate with them) the design choices.

5 CONCLUSION

In this paper, we presented a preliminary analysis of the competencies and skills required to UX designers by the Italian job market. Our analysis revealed as the UX designer is considered a technical figure closer but often distinct from the professional role of the front-end software developer. Although software development competence is still required in some cases, in several others, the core aspects of User-Centred Design seem to be correctly understood, and the required competencies and skills denote a relatively high UX maturity [4]. On the other hand, the request for more straightforward web design is still high, and the UX designer's role often overlaps (or it is confused) with the role of the graphical designer. Furthermore, Italian companies seem not yet ready to catch the strategic role that UX can play in aligning with business and marketing areas.

From a methodological perspective, our study can be classified as an online ethnography [19]. We are aware of potential pitfalls and ethical issues that this approach may raise [12]. Nevertheless, we believe that in our case, this approach did not raise ethical issues since the data were publicly available and they have been anonymized. Of course, the lack of dialogic confrontation might have induced misunderstandings, but the possibility to have interviews with job proponents was quite impractical. However, this is common of many other observational methods and, as noted above, a similar approach for data collection for the same purposes has already been used [10, 18]). Although this research is preliminary, because of the limited number of jobs advertisements collected and analyzed may be considered as a good practice to align academic and professional training with the industry's UX maturity.

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