From Cognitive Science to Computer Science:
Studying HCI in Rovereto

Christian Arnoldi
University of Trento
Italy
christian.arnoldi@unitn.it

Silvia Gabrielli
FBK
Italy
sgabrielli@fbk.eu

Remo Job
University of Trento
Italy
remo.job@unitn.it

Massimo Zancanaro
FBK
Italy
zancana@fbk.eu

1 INTRODUCTION

In 2010, the department of Cognitive Science of the University of Trento (located in the town of Rovereto) launched an innovative undergraduate program in HCI. The initiative exploited an informal collaboration with FBK, a top research institute located in Trento.

The key aspect of the program was the intuition of the need of merging competencies of Cognitive Science and Social Sciences with skills from Computer Science in order to train future ICT professionals.

This position paper provides a quick description of the curriculum of the course and its objectives as well as an initial discussion about its assessment.

2 ORGANIZATION OF THE CURRICULUM

The curriculum comprises 20 modules covering different topics in the two main areas of Cognitive/Social Sciences and Computer Science with a specific perspective on HCI.

The Cognitive Science and Social Science area comprises 7 modules for a total of 45 ECTS and includes topics as psychology, sociology of communication, semiotics, and cognitive ergonomics. The Computer Science area is articulated in a general area which includes 6 modules for 57 ECTS on programming and basic mathematics (calculus, statistics and logics) as well as other 6 modules for 42 ECTS devoted to topics directly related to HCI: basic HCI, designing of graphical interfaces, e-learning and language-based interfaces.

Many of the modules are offered with a strong *learn-as-doing* perspective, including project-based activities that can be continued over different modules. Students are encouraged to work in groups as much as possible, often supported by collaborative tools and platforms where their design work can be tracked and analytically reviewed for improving the educational approach offered over the years.

In addition to the specific modules, the students should be knowledgeable in English and one other foreign language (for a total of 9 ECTS).

Before the third year, the students have to complete an internship, possibly with a company, of approximately 2 full time months (15 ECTS).

Furthermore, 12 additionally ECTS are left to students to freely choose other modules that may complements their knowledge in areas that are of their specific interest. These credits can also be used to extend the internship to another 2 months.

3 THE PROGRAM IN FIGURES

Until the 2014/2015 academic year, 425 students enrolled in the program overall. The number of female and male students is roughly the same through the years (average proportion of female/male students is 0.94 with standard deviation 0.10). After the first academic year, there was a peak of 94 students enrolled and then it stabilizes around 60/80 (see figure 1). The last year, there was a drop over 20% which might be explained by a similar dynamics of enrollment in the university of Trento overall (over 3% drops) and specifically in the computer science courses (over 20% for engineering informatics and over 11% for computer science)
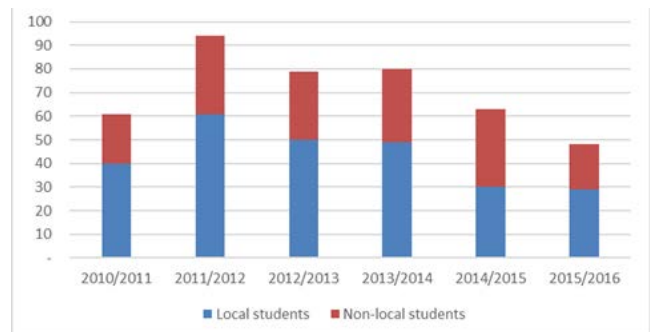

Figure 1. Local and non-local students enrolled in the program from 2010/2011 to 2015/2016.

That drop might also be partially explained by the reduction of non-local students, that is, students who are not resident in the province of Trento. The number of these students steadily increased after the first year and it dropped in the last year. This is

maybe due to a change in the dissemination actions taken the years before.

However, the attraction of non-local students is reasonably high, ranging from a minimum of 35% to a maximum 52% of the students, also considering the wide offer of competing programs in computer science and graphical design/arts in the surrounding regions. The vast majority of non-local students comes from other regions of North Italy (140 of which 121 from North-East regions) and only 19 from Center and South Italy; furthermore 7 people have residence from outside Italy and other 27 are not Italian citizens.
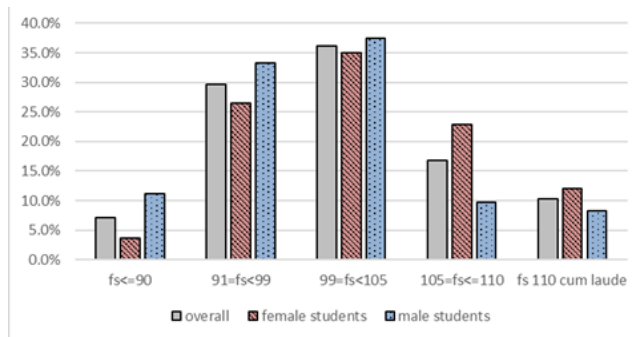

Figure 2. Final scores of students: overall, male students and female students.

The number of graduates at the end of 2016 is 155 which is from 49% to 66% of the eligible students (our data are from December 2016 but the students can graduate until March 2017 and still to be considered in the 2015/2016 academic year).

Slightly more female students graduate than male students (83 vs 72) and female students tend to have slightly better performance than male students (see figure 2).

4 FEEDBACK FROM INDUSTRY

In the last few years, an annual meeting with local industry representatives has been organized to advertise the course program and to collect feedback from potential local employers or customers of the graduate students.

The meeting is organized as an "Open day" initiative: successful former students are invited to give a talk about their experience after graduation and a selection of student projects are exhibited in the hall.

The companies that attended the events were usually software companies in the area and service companies with a strong competence in software development.

In general, this professional role is recognized as valuable although companies do not have yet this career path already defined in the organization and therefore outsourcing these competencies is usually the preferred choice. Indeed, many of former students proficiently work as freelancers.

The curriculum is appreciated and the need to integrate competencies in psychology and social science with technical knowledge is deemed necessary for a smoother merge in technical working environments. The recommendation most often provided is to complement the curriculum with competences in project management and organizational studies because in some cases this professional role is seen as best suited in a management career rather than a technical one.

5 CONCLUSION

In this paper, we shortly introduced the undergraduate program in HCI offered at the Department of Cognitive Science of the University of Trento. The core idea of the program is merging competencies of Cognitive Science and Social Sciences with skills from Computer Science in order to train future ICT professional. In the first 6 years, the course was able to attract a good number of students and it is well appreciated by the local industries.

We hope that, together with other initiatives in the local territory, the course will not only be able to train future professionals but also to influence the mindset of the local companies toward a better sensibility for UX as well as to encourage them to open more career opportunities in this area