

The following interviews are from 5 students who participated in the course "Data-science in Techno-socio-economic Systems" at ETH Zurich during 2015-2015. The interviews are carried out via e-mail by Dr. Evangelos Pournaras, who is one of the lecturers of the course. The interviews evaluate several education aspects outlined in the following paper:

Evangelos Pournaras, Cross-discipline Higher Education of Data Science – Beyond the Computer Science Student, Data Science, under review.

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% Interview 1

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Q1: How effective was the course for you?

A1: The course was effective in that it provided a good overview for techniques in data science.

Q2: Was this course too easy or too hard for you?

A2: This course was challenging but not too hard, especially since we had to work in groups for our final projects.

Q3: If you are a computer scientist, what was beneficial and limiting factors after attending a data science course designed beyond the computer scientist?

A3: -

Q4: If you are not a computer scientist, what was beneficial and limiting factor for you after attending a data science course taught by computer scientists and including other computer science students?

A4: I would have preferred to have hands on examples/tutorials of various techniques in a given programming language, for example python (limiting factor). However the format was sufficient to understand the benefits of different methods from a conceptual level.

Q5: How successful was the course to provide you the minimum set of skills to practice data science?

A5: I thought it helped point students in the right direction for which techniques might be useful for which questions, but it was

impossible to try all of them given the scope of the course and that we were working on our individual projects.

Q6: How effective was in this course to learn doing research by practicing data science?

A6: I already have quite a lot of experience in "doing research" but was nice to learn techniques from other disciplines (for example I come from civil and architectural engineering background)

Q7: How effective was in this course to learn data science by doing some research?

A7: It's nice to have a project to test your solutions, but it could have helped to have intermediate homework/assignments as well.

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% Interviewee 2

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Q1: How effective was the course for you?

A1: The course was a very nice change from my normal study life, as a GESS course should be. I learned a lot of interdisciplinary skills.

Q2: Was this course too easy or too hard for you?

A2: The course is one of the more complex and time intensive courses I did in GESS. I think the level was perfect to learn new skills.

Q3: If you are a computer scientist, what was beneficial and limiting factors after attending a data science course designed beyond the computer scientist?

A3: -

Q4: If you are not a computer scientist, what was beneficial and limiting factor for you after attending a data science course taught by computer scientists and including other computer science students?

A4: I profited from knowledge and experience of other participants and the lecturers and learned new terms of data science and statistics. The limiting factor was, that I did not have a lot of background knowledge about the hard skills and Libraries. This wasn't limiting for the course but for the project we did, because we needed a lot of time to find the right sources and libraries.

Q5: How successful was the course to provide you the minimum set of skills to practice data science?

A5: Very successful, I learned the skills to approach a big data problem and subdividing it into smaller problems. I also got to know

nice tools to that in real problems like Weka and scikit (a python library).

Q6: How effective was in this course to learn doing research by practicing data science?

A6: Quite effective, we were able to try different methods of data aggregation, to find interesting data.

Q7: How effective was in this course to learn data science by doing some research?

A7: The research part was quit time consuming and not that effective especially because I did not have any knowledge about data science before the course and did not really know where to start

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% Interview 3

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Q1: How effective was the course for you?

A1: The course was interesting but I felt a slight disconnection between the technical details and the application examples. That is, we saw many useful applications of data science and also many technical stuff about data science (data bases, algorithms etc.). Still, I would have liked to know more about the exact technical details of the example applications that were presented. I realize this would take more time and we would see less examples then, but as a computer science student I really like the implementation details.

Q2: Was this course too easy or too hard for you?

A2: The course was relatively easy for me, but this is probably because I come from computer science, and thus I was familiar with most technical details discussed during the course.

Q3: If you are a computer scientist, what was beneficial and limiting factors after attending a data science course designed beyond the computer scientist?

A3: A limiting factor was that a lot of time in the course was focused on data science technical stuff I was already familiar with. A benefit was seeing all those applications on the real world, which we don't usually focus on in computer science.

Q4: If you are not a computer scientist, what was beneficial and limiting factor for you after attending a data science course taught by computer scientists and including other computer science students?

A4: -

Q5: How successful was the course to provide you the minimum set of skills to practice data science?

A5: -

Q6: How effective was in this course to learn doing research by practicing data science?

A6: -

Q7: How effective was in this course to learn data science by doing some research?

A7: -

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% Interview 4
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Q1: How effective was the course for you?

A1: Later on in my studies I could see a lot of areas where a "data science approach" could be useful, so I am happy to tell that I aquired some basic skills to practice data science. So I really learnt relevant topics.

Q2: Was this course too easy or too hard for you?

A2: As I was a Mechanical Engineering student in my 4th semester so the course was pretty hard for me, but the effort was worth it.

Q3: If you are a computer scientist, what was beneficial and limiting factors after attending a data science course designed beyond the computer scientist?

A3: -

Q4: If you are not a computer scientist, what was beneficial and limiting factor for you after attending a data science course taught by computer scientists and including other computer science students?

A4: Beneficial: The way of thinking of a data scientist. Limiting: My limited experience with statistical programming software / languages like e.g. "R".

Q5: How successful was the course to provide you the minimum set of skills to practice data science?

A5: Later on in my studies I could see a lot of areas where a "data science approach" could be useful, so I am happy to tell that I aquired some basic skills to practice data science.

Q6: How effective was in this course to learn doing research by

practicing data science?

A6: Practicing what you are learning is in my opinion the most important step. So if there wasn't our project, I wouldn't understand cluster based approaches like I do so now.

Q7: How effective was in this course to learn data science by doing some research?

A7: As mentioned before, doing projects are in my opinion the best way to learn.

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% Interview 5

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Q1: How effective was the course for you?

A1: In the course, I learnt the following: 1. Group work: got to work closely with people, learn how they work and think, brainstorming and share ideas, make friends. 2. Learn about social data in practice: there's a lot of data, but how much signal is there really inside? where to get the data from 3. Opportunity to explore new data mining techniques

Q2: Was this course too easy or too hard for you?

A2: Appropriate

Q3: If you are a computer scientist, what was beneficial and limiting factors after attending a data science course designed beyond the computer scientist?

A3: Beneficial: Coaching from the COSS team. Learn about social data, opportunities, limitations. Presentations by the other teams: gives ideas, insights. Learn some new tools (e.g. mawk). Limiting: Too much material covered during the lectures; perhaps better to focus on 1 or 2 specific techniques, with some exercises, so that we can really master and use them after the lecture. Today's world does not really allow for vague understanding of many techniques, Better to have 3 tools that you absolutely master, e.g OLS, clustering and classification. Would be good to have some pre-processed datasets; too much time was spent by teams pre-processing the same data. And this would allow to bring the focus on analysis, rather than pre-processing

Q4: If you are not a computer scientist, what was beneficial and limiting factor for you after attending a data science course taught by computer scientists and including other computer science students?

A4: -

Q5: How successful was the course to provide you the minimum set of

skills to practice data science?

A5: Only so-so. As I said earlier, too much material and too little practice of the tools. Better to focus on the 'top 3' tools and techniques

Q6: How effective was this course to learn doing research by practicing data science?

A6: At D-MTEC, we have a lecture called Empirical Methods in Management, that is focused on how to conduct research (involving primary data collection), and how to write a research report. It's a really good course. I think that you should also have part of the lecture devoted to how to conduct research in general (e.g internal and external validity, etc) and how to write a publication-grade report. Because you are expecting such a publication-grade report, you should devote a lecture or two on how to get there. Don't forget that the audience does not have PhD's (yet), and not even Master Theses.

Q7: How effective was in this course to learn data science by doing some research?

A7: Great! One of my best ETH experiences so far!