Proposal: Unaligned Expectations in Universities and Industry for New Graduates in Computer Science and Software Engineering

Alan Franzoni
for Submission
City, Italy
afranzoni3@gatech.edu

Hasti Ghabel
for Submission
Atlanta, GA
hghabel1@gatech.edu

ABSTRACT

Abstract-There is a widespread agreement that new graduates from computer science and software engineering does not always possess required skills, abilities or knowledge when joining software industry. The phenomenal question is what are the expectations and motivations for students, teachers in the field of computer science and software engineering? Following that what employers expect from new graduates in this field? Is there any gap between the expectation of these groups? How would be the best practice to limit the possible gap. In this paper and in our project we will discuss about available research articles and analyze the results. We will initially provide survey and sending it to a smaller group in this field such as our classmates. Then, we will provide the official survey and send it to many people outside this classroom, who are active in this field as teacher, student, or employers. We will analyze our results and report it in our paper.

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous; See http://acm.org/about/class/1998/ for the full list of ACM classifiers. This section is required.

Author Keywords

Authors' choice; of terms; separated; by semicolons; include commas, within terms only; required.

*** PROPOSAL TODO ITEMS ***

A feedback: What is the underlying educational problem or approach you see as a problem? What are the main problem(s) with this approach or problem? How can I fix it?

1- What are the research background that shows the motivation and expectations for student/teachers/employers in cs/se program?

CHI'16, May 07–12, 2016, San Jose, CA, USA

ISBN 123-4567-24-567/08/06…$15.00

DOI: http://dx.doi.org/10.475/123_4

2- what are the problems to limit the gap for new graduates in finding a new job after school? Why there is a gap in the new graduate skills and employer expectations?

3- what are some methodology that can shorten this gap? We can compare ivy league schools and other ones to see the differences and rate of employment after graduation?

*** INTRODUCTION ***

One of the essential elements of a good software is to have a good software engineer (Paul Luo Li et al., 2015). The question is what makes a great software engineer? (Paul Luo Li et al., 2015) All different groups are looking into this question: employers want to hire a good software engineer, universities want to train a good engineer and new graduates want to become great (Paul Luo Li et al., 2015). Paul Luo Li et al. mention some of the employer's expectations for hiring software developers (Paul Luo Li et al., 2015). The research indicates that the expert engineers are more productive in terms of producing faster solutions, produce more amount of code in the same amount of time, and write code with much fewer bugs (Paul Luo Li et al., 2015).

Hewner and Guzdial investigate a game company on what are the employer expectations from new graduates (Hewner and Guzdial, 2010). They identify two of the essentials skills or expectations are high programming skills as well as people skills such as working in a team and collaborating with other people (Hewner and Guzdial, 2010). McConnell argue that software developers' personality traits like intellectual honesty, curiosity and being humble about their intelligence are important skills in addition to technical skills (McConnell, 2004). Hewner describes the mismatch between a student's expectations on skills they hope to learn and what they are taught in an introductory computer science class (Hewner, 2011). He notes that students come to the course with preconception about what they will learn in that computer science course (Hewner, 2011). The educators mention some of the students preconceptions as below (Hewner, 2011):

- Students expect to learn "advanced features" in application softwares.
- They expect to do IT work such as assembling computers from parts and configure routers.
- They expect to learn only about programming and not the

architecture and theory.

Teaching computer science is different from teaching other subjects (Guzdial, 2014, https://cacm.acm.org/blogs/blog-cacm/174930-what-it-takes-to-be-a-successful-high-school-computer-science-teacher/fulltext) Good teachers should be able to read the code and help students to write code by hand off from computers (as well as at the computer) (Guzdel, 2014). On the other hand, the less successful teachers focus heavily on assessments and readings (Guzdel, 2014).
The technology and computer science industries are growing so fast (Ayofe and Ajetola, 2009). Therefore, the companies are looking for the graduates, who are able to use the latest technologies. However, the companies criticize the universities curriculum doesn't meet the practical issues in industry (Ayofe and Ajetola, 2009).

TYPESET TEXT

The styles contained in this document have been modified from the default styles to reflect ACM formatting conventions. For example, content paragraphs like this one are formatted using the Normal style.

LaTeX sometimes will create overfull lines that extend into columns. To attempt to combat this, the `.cls` file has a command, `\sloppy`, that essentially asks LaTeX to prefer underfull lines with extra whitespace. For more details on this, and info on how to control it more finely, check out http://www.economics.utoronto.ca/osborne/latex/PMAKEUP.HTM.

Title and Authors

Your paper's title, authors and affiliations should run across the full width of the page in a single column 17.8 cm (7 in.) wide. The title should be in Helvetica or Arial 18-point bold. Authors' names should be in Times New Roman or Times Roman 12-point bold, and affiliations in 12-point regular.

See `\author` section of this template for instructions on how to format the authors. For more than three authors, you may have to place some address information in a footnote, or in a named section at the end of your paper. Names may optionally be placed in a single centered row instead of at the top of each column. Leave one 10-point line of white space below the last line of affiliations.

Abstract and Keywords

Every submission should begin with an abstract of about 150 words, followed by a set of Author Keywords and ACM Classification Keywords. The abstract and keywords should be placed in the left column of the first page under the left half of the title. The abstract should be a concise statement of the problem, approach, and conclusions of the work described. It should clearly state the paper's contribution to the field of HCI.

Normal or Body Text

Please use a 10-point Times New Roman or Times Roman font or, if this is unavailable, another proportional font with serifs, as close as possible in appearance to Times Roman 10-point. Other than Helvetica or Arial headings, please use sans-serif or non-proportional fonts only for special purposes, such as source code text.

Figure 1. Insert a caption below each figure. Do not alter the Caption style. One-line captions should be centered; multi-line should be justified.

		Test Conditions	
Name	*First*	*Second*	*Final*
Marsden	223.0	44	432,321
Nass	22.2	16	234,333
Borriello	22.9	11	93,123
Karat	34.9	2200	103,322

Table 1. Table captions should be placed below the table. We recommend table lines be 1 point, 25% black. Minimize use of table grid lines.

First Page Copyright Notice

This template include a sample ACM copyright notice at the bottom of page 1, column 1. Upon acceptance, you will be provided with the appropriate copyright statement and unique DOI string for publication. Accepted papers will be distributed in the conference publications. They will also be placed in the ACM Digital Library, where they will remain accessible to thousands of researchers and practitioners worldwide. See http://acm.org/publications/policies/copyright_policy for the ACM's copyright and permissions policy.

Subsequent Pages

On pages beyond the first, start at the top of the page and continue in double-column format. The two columns on the last page should be of equal length.

References and Citations

Use a numbered list of references at the end of the article, ordered alphabetically by last name of first author, and referenced by numbers in brackets [**?**, **?**, **?**]. Your references should be published materials accessible to the public. Internal technical reports may be cited only if they are easily accessible (i.e., you provide the address for obtaining the report within your citation) and may be obtained by any reader for a nominal fee. Proprietary information may not be cited. Private communications should be acknowledged in the main text, not referenced (e.g., "[Borriello, personal communication]").

References should be in ACM citation format: http://acm.org/publications/submissions/latex_style. This includes citations to internet resources [**?**, **?**, **?**, **?**] according to ACM format, although it is often appropriate to include URLs directly in the text, as above.

SECTIONS

The heading of a section should be in Helvetica or Arial 9-point bold, all in capitals. Sections should *not* be numbered.

Subsections

Headings of subsections should be in Helvetica or Arial 9-point bold with initial letters capitalized. For sub-sections and sub-subsections, a word like *the* or *of* is not capitalized unless it is the first word of the heading.

Sub-subsections

Headings for sub-subsections should be in Helvetica or Arial 9-point italic with initial letters capitalized. Standard `\section`, `\subsection`, and `\subsubsection` commands will work fine in this template.

FIGURES/CAPTIONS

Place figures and tables at the top or bottom of the appropriate column or columns, on the same page as the relevant text (see Figure 1). A figure or table may extend across both columns to a maximum width of 17.78 cm (7 in.).

Captions should be Times New Roman or Times Roman 9-point bold. They should be numbered (e.g., "Table 1" or "Figure 1"), centered and placed beneath the figure or table. Please note that the words "Figure" and "Table" should be spelled out (e.g., "Figure" rather than "Fig.") wherever they occur. Figures, like Figure 2, may span columns and all figures should also include alt text for improved accessibility. Papers and notes may use color figures, which are included in the page limit; the figures must be usable when printed in black-and-white in the proceedings.

The paper may be accompanied by a short video figure up to five minutes in length. However, the paper should stand on its own without the video figure, as the video may not be available to everyone who reads the paper.

Inserting Images

When possible, include a vector formatted graphic (i.e. PDF or EPS). When including bitmaps, use an image editing tool to resize the image at the appropriate printing resolution (usually 300 dpi).

QUOTATIONS

Quotations may be italicized when *"placed inline"* (Anab, 23F).

> Longer quotes, when placed in their own paragraph, need not be italicized or in quotation marks when indented (Ramon, 39M).

LANGUAGE, STYLE, AND CONTENT

The written and spoken language of SIGCHI is English. Spelling and punctuation may use any dialect of English (e.g., British, Canadian, US, etc.) provided this is done consistently. Hyphenation is optional. To ensure suitability for an international audience, please pay attention to the following:

- Write in a straightforward style.
- Try to avoid long or complex sentence structures.
- Briefly define or explain all technical terms that may be unfamiliar to readers.
- Explain all acronyms the first time they are used in your text—e.g., "Digital Signal Processing (DSP)".
- Explain local references (e.g., not everyone knows all city names in a particular country).
- Explain "insider" comments. Ensure that your whole audience understands any reference whose meaning you do not describe (e.g., do not assume that everyone has used a Macintosh or a particular application).
- Explain colloquial language and puns. Understanding phrases like "red herring" may require a local knowledge of English. Humor and irony are difficult to translate.
- Use unambiguous forms for culturally localized concepts, such as times, dates, currencies, and numbers (e.g., "1–5–97" or "5/1/97" may mean 5 January or 1 May, and "seven o'clock" may mean 7:00 am or 19:00). For currencies, indicate equivalences: "Participants were paid ₩ 25,000, or roughly US $22."
- Be careful with the use of gender-specific pronouns (he, she) and other gendered words (chairman, manpower, man-months). Use inclusive language that is gender-neutral (e.g., she or he, they, s/he, chair, staff, staff-hours, person-years). See the *Guidelines for Bias-Free Writing* for further advice and examples regarding gender and other personal attributes [**?**]. Be particularly aware of considerations around writing about people with disabilities.
- If possible, use the full (extended) alphabetic character set for names of persons, institutions, and places (e.g., Grønbæk, Lafreniére, Sánchez, Nguyễn, Universität, Weißenbach, Züllighoven, Århus, etc.). These characters are already included in most versions and variants of Times, Helvetica, and Arial fonts.

ACCESSIBILITY

The Executive Council of SIGCHI has committed to making SIGCHI conferences more inclusive for researchers, practitioners, and educators with disabilities. As a part of this goal, the all authors are asked to work on improving the accessibility of their submissions. Specifically, we encourage authors to carry out the following five steps:

1. Add alternative text to all figures
2. Mark table headings
3. Add tags to the PDF
4. Verify the default language
5. Set the tab order to "Use Document Structure"

For more information and links to instructions and resources, please see: http://chi2016.acm.org/accessibility. The `\hyperref` package allows you to create well tagged PDF files, please see the preamble of this template for an example.

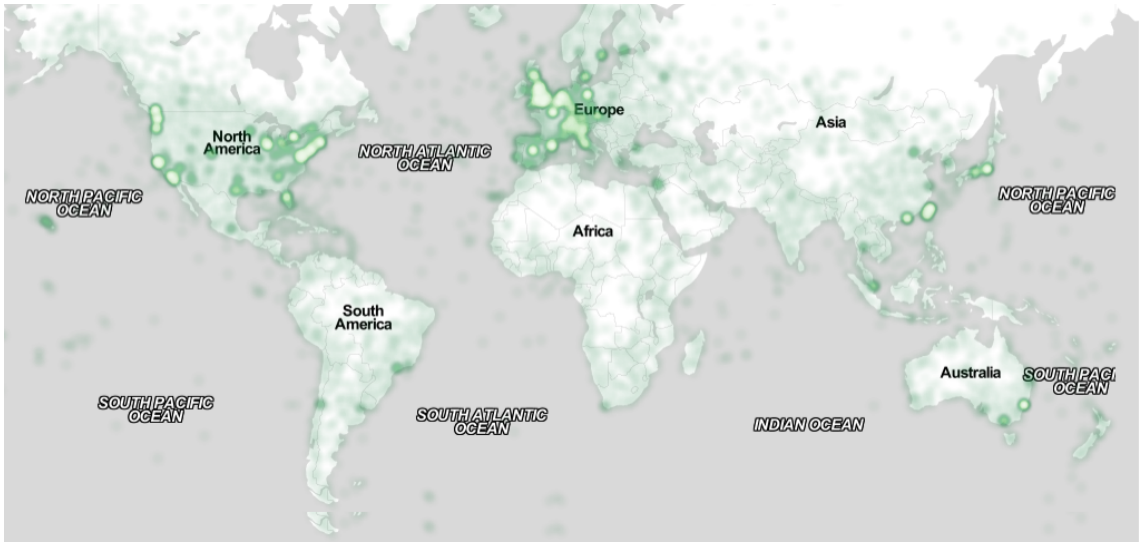

Figure 2. In this image, the map maximizes use of space. You can make figures as wide as you need, up to a maximum of the full width of both columns. Note that LaTeX tends to render large figures on a dedicated page. Image: ayman on Flickr.

PAGE NUMBERING, HEADERS AND FOOTERS

Your final submission should not contain footer or header information at the top or bottom of each page. Specifically, your final submission should not include page numbers. Initial submissions may include page numbers, but these must be removed for camera-ready. Page numbers will be added to the PDF when the proceedings are assembled.

PRODUCING AND TESTING PDF FILES

We recommend that you produce a PDF version of your submission well before the final deadline. Your PDF file must be ACM DL Compliant. The requirements for an ACM Compliant PDF are available at: http://www.sheridanprinting.com/typedept/ACM-distilling-settings.htm.

Test your PDF file by viewing or printing it with the same software we will use when we receive it, Adobe Acrobat Reader Version 10. This is widely available at no cost. Note that most reviewers will use a North American/European version of Acrobat reader, so please check your PDF accordingly.

When creating your PDF from Word, ensure that you generate a tagged PDF from improved accessibility. This can be done by using the Adobe PDF add-in, also called PDFMaker. Select Acrobat | Preferences from the ribbon and ensure that "Enable Accessibility and Reflow with tagged Adobe PDF" is selected. You can then generate a tagged PDF by selecting "Create PDF" from the Acrobat ribbon.

CONCLUSION

It is important that you write for the SIGCHI audience. Please read previous years' proceedings to understand the writing style and conventions that successful authors have used. It is particularly important that you state clearly what you have done, not merely what you plan to do, and explain how your work is different from previously published work, i.e., the unique contribution that your work makes to the field. Please consider what the reader will learn from your submission, and how they will find your work useful. If you write with these questions in mind, your work is more likely to be successful, both in being accepted into the conference, and in influencing the work of our field.

ACKNOWLEDGMENTS

Sample text: We thank all the volunteers, and all publications support and staff, who wrote and provided helpful comments on previous versions of this document. Authors 1, 2, and 3 gratefully acknowledge the grant from NSF (#1234–2012–ABC). *This whole paragraph is just an example.*

REFERENCES FORMAT

Your references should be published materials accessible to the public. Internal technical reports may be cited only if they are easily accessible and may be obtained by any reader for a nominal fee. Proprietary information may not be cited. Private communications should be acknowledged in the main text, not referenced (e.g., [Golovchinsky, personal communication]). References must be the same font size as other body text. References should be in alphabetical order by last name of first author. Use a numbered list of references at the end of the article, ordered alphabetically by last name of first author, and referenced by numbers in brackets. For papers from conference proceedings, include the title of the paper and the name of the conference. Do not include the location of the conference or the exact date; do include the page numbers if available.

References should be in ACM citation format: http://www.acm.org/publications/submissions/latex_style. This includes citations to Internet resources [?, ?, ?] according to ACM format, although it is often appropriate to include URLs directly in the text, as above. Example reference formatting for individual journal articles [?], articles in conference proceedings [?], books [?], theses [?], book chapters [?], an entire journal issue [?], websites [?, ?], tweets [?], patents [?], games [?],

and online videos [**?**] is given here. See the examples of citations at the end of this document and in the accompanying `BibTeX` document. This formatting is a edited version of the format automatically generated by the ACM Digital Library (`http://dl.acm.org`) as "ACM Ref." DOI and/or URL links are optional but encouraged as are full first names. Note that the Hyperlink style used throughout this document uses blue links; however, URLs in the references section may optionally appear in black.