CSC290 Communication Skills for Computer Scientists

Lisa Zhang

Lecture 1; Sep 10, 2018
Welcome to CSC290!
Introduction

- **Instructor**: Lisa Zhang
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  - Please prefix email subject with ‘CSC290’
- **Office hours**: Wednesdays 2pm-4pm DH3068
About your instructor

Before I started teaching, I was...

▶ a masters student doing research in Machine Learning
▶ a senior data scientist at an advertising technology company
▶ a startup founder of a data visualization company
▶ a software developer intern in various Silicon Valley companies, e.g. Facebook, ContextLogic (Wish)

I studied...

▶ machine learning at UofT
▶ pure math at UWaterloo

Ask me about anything outside of class, or empty office hours!
About you

- Pursuing CS major?
- What are your aspirations?
- Are you interested in research?
- What CS (or other) careers do you wish to pursue?
- What are your near term goals?
About you – survey

- You are a very diverse group!
  - mostly second years
  - transfer students, exchange students, etc
- Mostly industry-focused
About you – survey

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What career paths are you interested in?

68 responses

- Working in industry: 59 (86.8%)
- Starting your own startup: 34 (50%)
- Research: 20 (29.4%)
Most respondents agree that writing is important

How important do you think writing is for someone studying Computer Science?

68 responses
But... I would not be taking this course if it was not required.

68 responses

- 51.5% True
- 48.5% False
How would you rate your academic writing skills?

68 responses

- 50%: Competent
- 32.4%: Strong
- 11.8%: Excellent
- Very Weak
- Weak
College graduates are highly confident of their abilities in both traditional “hard” and “soft” skill areas. Employers, on the other hand, are increasingly frustrated at what they see as a growing problem with graduates’ soft skills, or rather, lack thereof.

– Carol et al. 2016. Mixed Signals: Do College Graduates Have the Soft Skills That Employers Want?
# TABLE I: TOP 10 SOFT SKILLS EMPLOYERS SEEK IN COLLEGE GRADUATES

<table>
<thead>
<tr>
<th>Skill</th>
<th>Employer %</th>
<th>% Employers feel college grads well prepared</th>
<th>% College grads feel well prepared</th>
<th>% Students surveyed feel well prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hart Research Associates:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal communication</td>
<td>85</td>
<td>28</td>
<td>62</td>
<td>72.4</td>
</tr>
<tr>
<td>Teamwork</td>
<td>83</td>
<td>37</td>
<td>64</td>
<td>83.6</td>
</tr>
<tr>
<td>Written communication</td>
<td>82</td>
<td>27</td>
<td>65</td>
<td>84.1</td>
</tr>
<tr>
<td>Ethical judgment / decision making</td>
<td>81</td>
<td>30</td>
<td>62</td>
<td>65.4</td>
</tr>
<tr>
<td>Critical/analytical thinking</td>
<td>81</td>
<td>26</td>
<td>66</td>
<td>86.9</td>
</tr>
<tr>
<td>Applying knowledge &amp; skills to real world</td>
<td>80</td>
<td>23</td>
<td>59</td>
<td>--</td>
</tr>
<tr>
<td>Problem-solving</td>
<td>70</td>
<td>24</td>
<td>59</td>
<td>87.9</td>
</tr>
<tr>
<td>Locating, organizing, and evaluating info</td>
<td>68</td>
<td>29</td>
<td>64</td>
<td>--</td>
</tr>
<tr>
<td>Innovation / creativity</td>
<td>65</td>
<td>25</td>
<td>57</td>
<td>--</td>
</tr>
<tr>
<td>Staying current on changing technologies</td>
<td>60</td>
<td>37</td>
<td>46</td>
<td>--</td>
</tr>
</tbody>
</table>
What are soft skills?

- How effective are you at working with others?
- How easy is it to work with you?
- Can you communicate succinctly and effectively?
Coding vs writing

Coding is unforgiving. Its structure is well-defined and enforced by whatever interpreter or compiler you might be using. You are punished swiftly for obvious errors… Writing appears more forgiving [but] there is a compiler and … It’s your readers. Not only do they care about syntax, but they also want to learn something, and, perhaps, be entertained…

–
http://randsinrepose.com/archives/please-learn-to-write/
What does a software developer write?

- Documentation for other programmers
- Users guides or error messages for users
- Email with co-workers
- Presentations for management
- Job applications, resumes, cover letters
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Course Goals

To develop skills in:

- Written communication
- Oral communication
- Interpersonal communication

In order to develop those skills, you will be:

- writing every week
- presenting during tutorials
- working in groups
Course Components

- **Lectures:**
  - Monday afternoons, lead by me
  - Introduce new material, exercises

- **Tutorials:**
  - Fridays, lead by TA’s
  - Attendance is mandatory starting this week

- **Readings:**
  - No textbooks
  - Readings are posted weekly.

- Any material covered in lectures / tutorials / readings is fair game for the assignments, midterm, and exam.
Make sure you have registered in a tutorial section in ACORN - by 11:59pm tonight.
You must be able to attend the tutorial in which you are registered.
You will be grouped with other students in your tutorial.

**Tutorials start this week**
Evaluations

There is something due every week, so that you write regularly.

- Regular Weekly Blog Posts (10%):
- Critical Review Articles (20%):
  - Article 1 + Revisions (10%)
  - Article 2 (10%)
- Group Project & Presentation (25%):
- Tutorial Participation (5%)
- Midterm (10%)
- Exam (30%)
Syllabus and Course Website Scavenger Hunt

- Which topic on the syllabus interest you the most? the least?
- How will blog posts be submitted?
- How will critical review articles be submitted?
- How will group projects be submitted?
- What is the late submission policy for this course?
- What is Turnitin.com what will the course staff use it for?
- What is plagiarism and how can you avoid it?
Is this an academic offense?

- You submit a blog post that your friend wrote a year ago.
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- You take one paragraph from a source that you cite in your critical review article.
- You ask your friend to proofread your critical review article, and she makes several revisions for you.
- You ask your friend to proofread your critical review article, and she points out issues that you could improve.
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Course Expectations

- Use and check your UofT email address
- Check the course website and announcements
- Provide feedback to the instructor or TAs if/when necessary
- Work cooperatively with your group. Group work is not optional in this course as part of your learning outcome is to learn to work as part of a team.
The dreaded group work

- Group work can be frustrating, unpredictable, difficult
- But also important!
Frustration

- Frustration is okay!
- As a professional, you will feel frustrated on a daily basis, even if you love your job.
- Reacting and communicating well while frustrated is an important soft skill.
Challenge:

- Be introspective when frustrated.
- Treat frustration as a learning opportunity.
- Be the person that others find easy to work with.
Resources

The Robert Gillespie Academic Skills Centre (RGASC)
http://www.utm.utoronto.ca/asc/

- 3rd floor of the Library
- Make an appointment or visit a drop-in
- 30 minute sessions tailored to you
- Help with
  - Time management
  - Study habits
  - Writing (creating a thesis, arguing, editing, etc)
  - English language learning
Resources - Campus Happenings

Information & Instructional Technology Services (I&ITS) – aka. Service Desk @ CCT Atrium http://www.utm.utoronto.ca/iits/

AccessAbility Resource Centre (AARC) @ DV 2037 http://www.utm.utoronto.ca/accessability/

Career Centre @ DV 3094 http://www.utm.utoronto.ca/careers/
Questions?

- Can you explain how to stay anonymous when writing?
  - Avoid using your name, address, name of high school
  - Focus on your interests, goals, and accomplishments
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- How would someone with a stutter be accommodated in verbal presentations?
Can you explain how to stay anonymous when writing?
  ▶ Avoid using your name, address, name of high school
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How would someone with a stutter be accommodated in verbal presentations?

Is it possible to go over the common differences between high school-level writing and university-level writing?
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- How would someone with a stutter be accommodated in verbal presentations?

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Other questions?
Communication Theory
Agree or Disagree?

“I am only responsible for what I say not for what you understand”
The SMCR Model:

Communication involves two parties: sender and receiver

- **Sender**: Sender of message, with some *intention*
- **Message**: *Encoding* of the intention
- **Channel**: The medium in which the message is transmitted
- **Receiver**: *Decodes* the message
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Successful communication = message intended is the one perceived/received
Parts of Communication

- **Sender / Yourself**: How well do you understand the message, audience, medium?
- **Message**: What are you trying to communicate?
- **Channel / Medium**: What does the medium communicate about the message?
- **Receiver / Audience**: Who are you trying to communicate to?

**Goal** What are you trying to accomplish?
Work backwards

- **Goal**: What are you trying to accomplish?
- **Receiver / Audience**: Who are you trying to communicate to?
- **Channel / Medium**: What does the medium communicate about the message?
- **Message**: What are you trying to communicate?
- **Sender / Yourself**: How well do you understand the message, audience, medium?
Consider your medium!

PLEASE KEEP THE DOOR CLOSED!!! THANK YOU!!!

Please don’t use Comic Sans—we are a Fortune 500 Company, not a Lemonade Stand.
What does the Comic Sans font communicate?
Structure is Part of Communication

- An essay has an introduction, a body, and a conclusion.
- The first sentence in a paragraph identifies its purpose.
- An email has a subject line.
- Easy to use web sites have a navigation bar.
Structure is Part of Communication

▶ Structures evolved as a means of effectively achieving a particular goal.
▶ Structures simplify the creation of a message by outlining the basic set of questions to be answered.
▶ Known structures are familiar to people making it easier to decipher the message within.

Consider how these apply to the previous examples
Parts of Communication for Assignments

When writing your blog posts, assignments, etc consider . . .

- What is your goal/purpose?
- What is your message?
- What is the medium?
- Who is your audience?
Setting up your blog

- **Audience**: Your classmates, TAs, instructors, others who are interested in computer science.
- **Medium**: Web browser
  - How should you structure your blog?
  - How formal / informal should it be?
  - What does the title communicate?
Serif Fonts: associated with respect, tradition, grandeur and authority

San Serif Fonts: associated with modernity, straightforwardness and sensibility
Font?

- **Proportional**: easier to read, used for most prose
- **Monospace**: used for code (why?)
Contrast?

- Brightness contrast increases legibility
- Brightness contrast increases legibility
- Brightness contrast increases legibility
- Brightness contrast increases legibility
- Brightness contrast increases legibility
- Complementary colors are most effective
- Complementary colors are most effective
- Adjacent colors are less effective
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The optimal line length for your body text is considered to be 50-60 characters per line, including spaces ("Typographie", E. Ruder). Other sources suggest that up to 75 characters is acceptable. – https://baymard.com/blog/line-length-readability
Most readers “skim”; they scan for important information.

Break your content into parts to help your readers.
Other concerns?

- Tone? (Formal/informal?)
- Mobile readers?
- Links?
- Images?
- Structure?
Summary

- What is the SMCR model of communication?
- Why is it important to tailor your communication to your audience?
- How can the medium affect the message?
- How is structure a part of communication?
- What are aspects of your blog (medium) that you should be mindful of?
This week's tutorial: (Mini) Networking
Why Network?

- Knowing people can help you succeed!
- Only 30% of new jobs are advertised.
- Referrals are taken more seriously than “cold” applications.
- Effective networking is one way to meet people.
Why are we talking about networking now?

Informal networking takes place any time

- Lectures, tutorials, lunchtime, computer labs
- Standing in line at the movies, riding the bus
- Right now!
Be deliberate

- Think about how you introduced yourself to others today
  - What worked?
  - What do you want to change?
- How will you introduce yourself on your blog?
Things to do this week

- Make sure you are enrolled in a tutorial section
- Bookmark the course website
- Reading the required + optional readings
- Write your first blog post
- Post your blog on Quercus
- Get to know your classmates