Standards for ChatGPT-Enhanced Technical Writing: Objectives, Obstacles, Options, and Opportunities

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A significant part of a technical person’s time is spent in writing. Not uncommonly, that person’s career depends as much on their writing skills as upon their technical work. Increasingly, computers bear a significant part of the burden of all the text that needs to be generated. Today this increase in computer aid is beginning to pose many problems. A standardized approach to these issues may need to be addressed. The simulation standards community may be well-situated to contribute to the orderly evolution as to how these issues are resolved.
Writing: Often not a R&D Professional’s Forte

• **Writing takes up a significant part of STEM professional’s day**
  - Most of it is straightforward, but some is very stressful
  - Some is very formal (e.g. Proposals)
  - Some is very informal (e.g. eMails)
  - Very little is hand-written anymore

• **Little of Tertiary Education Focuses on Writing**
  - One English Class as an incoming freshman
  - Maybe one tech writing course in grad school
  - <4% of college

• **Most did not get much help outside the classroom**
  - There are classes offered at Univ. of Chicago for newly hired PhD
  - A CEO of a major text firm says he has to give out Strunk and White
IBM used to give out free copies of K&R, but a major game company now has to give out Strunk & White because their programmers can’t write well.
Is this Really a Problem?

- **Is writing an out-dated skill?**
  - Quill pens and broad swords
  - Star Trek Computer
  - Abilities on the command line and writing program code
- **Writing and Language are drivers of analysis?**
  - G-Factor testing relies on verbal abilities
- **Will needed skills Atrophy?**
  - SciFi examples (Wall-E)
- **May skills be required in other environments?**
  - If computer is not available
  - If societal infrastructure fails
To put even a casual quantification on the importance of drafting skills, the authors conducted a local straw poll of people they knew, asking how much time they spent on drafting written material and preparing/giving oral presentations. The entire table is in the paper but the format can be seen to the right and the high & low numbers below.
Writing in a Group or Alone
Skills Needed for Communications

• **Verbal Skills**
  - Grammar
  - Organization
  - Articulate

• **Physical Skills**
  - Typing
  - Hand writing

• **Audience Awareness**
  - Tone
  - Knowledge level
  - Biases

• **Types of written products**
Writing Products often Generated
Analogy of Cinema Production and Technical Writing

• **In Cinema Creators**
  - Concept creator
  - Writer of the dialogue
  - Cinematographer
  - Director
  - Music composer
  - Actor
  - …

• **In Technical Writing**
  - Thesis visionary
  - Writer of the text
  - Paper formatter
  - Reviewer/Editor
  - Slide designer
  - Presenter
  - …

• **Why is this important?**
  - Even in the Cinema, many roles may be performed by one person
  - Audience may not care much who did what
  - Consider those who want to make use of skills of creator
  - Authorship becomes a critical matter
Computer Skill sets for Better Writing

• **Computer editing**
  - No longer need precise typing skills
  - Can now make corrections without leaving record of correction
    - *MS Theses and PhD dissertations used to require perfect copy*
    - *No white-out, no correction tape*

• **Computer Spelling Checkers**
  - Requires a less time-consuming of work

• **Computer Grammar Checkers**
  - Pick up most blatant errors such as use of wrong verb

• **Simple phrase Detection and Insertion of Appropriate Word**
  - Word completion
  - Word choice offered
Intelligent Text Generation

• **Caveat**
  - This presentation is NOT about ChatGPT
  - The Authors are experts therein
  - They are not even experienced users

• **It is about the impacts**
  - What might be in the future
  - What responses may be needed

• **Disciplines of interest**
  - Ethics
  - Communication efficacy
  - Evaluative reliability
  - Danger of creation of false impression
ChatGPT Overview Intro

- **Provides readable text**
  - Generates written material
  - Uses AI Techniques
  - Evolved over last 30 years
  - Available on-line

- **Input**
  - Via verbal prompts from user
  - Typing, oral input feasible
  - The entire web

- **Series of Prompt**
  - Do re-writes
  - Change tone
  - Change length

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**How Long it Took Top Apps to hit 100M Monthly Users**

<table>
<thead>
<tr>
<th>App</th>
<th>Months to reach 100M global MAUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChatGPT</td>
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</tr>
<tr>
<td>TikTok</td>
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<td>Instagram</td>
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<td>Uber</td>
<td>70</td>
</tr>
<tr>
<td>Google Translate</td>
<td>78</td>
</tr>
</tbody>
</table>
Underlying AI

LLM (GPT-3.5)
(Large Language Model)
Potential Problems with Using ChatGPT

- Ethics of Misrepresentation
- Plagiarism misleads potential Users, Funders or Collaborator
- Careful scrutiny of concepts may be discouraged
- Cognitive stimulation nature of drafting lost or reduce
- Fails to give credit to creators of original authors
- May not apply human analysis of reliability of the source
- Pressure to stay on schedule diminished
- Potential violation of copyright laws amplified
Professional Standards

• **Need to mitigate harmful impacts**

• **Disclosure**
  - In acknowledgement Section?
  - Before oral presentations?
  - Who should promulgate rules?

• **Restricted uses**
  - Are spell-checkers a significant issue?
  - Which uses really do have significant impacts?
  - Are some applications of this technology the future?
  - Will techies be tempted to give up skills they have developed?

• **Sanctions**
  - Current plagiarism insights
  - Data manipulation
  - Enforcement issues
Conclusions

• Computer-Generated Text will NOT go away

• The unfettered use thereof may have deleterious effects

• A Reasoned Review of Options may be in order
  ▪ Disclosure rules
  ▪ Levels of use (e.g. spell-checker and paste “authorship”)
  ▪ Prohibited uses vs. cut
  ▪ Sanctions

• Standards community has skills and experience others don’t
  ▪ Cross platform studies to insure consistency
  ▪ Unbiased approach to all stake-holders
  ▪ Willingness to rely on others more versed in individual skill sets
  ▪ Manifest “no dog in the fight”
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Q&A / Discussion