



SIS



**Simulation Interoperability
Standards Organization**

"Simulation Interoperability & Reuse through Standards"

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

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Introduction

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.

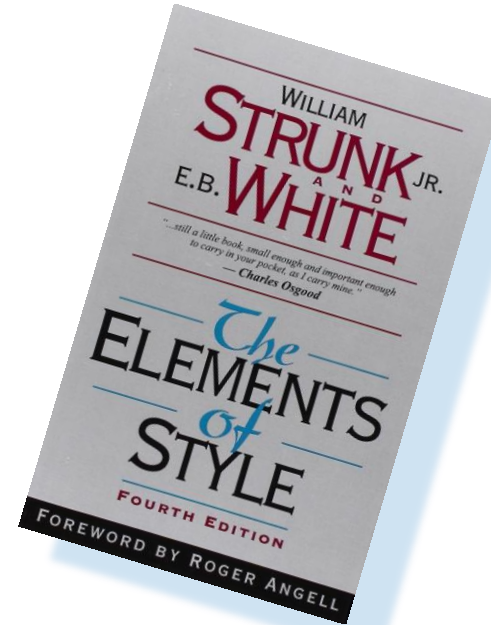


Writing: Often not a R&D Professional's Forte

- **Writing takes up a significant part of STEM professional's day**
 - Most of it is straight forward, 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



A Failure to Communicate



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



Straw Poll Data

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.

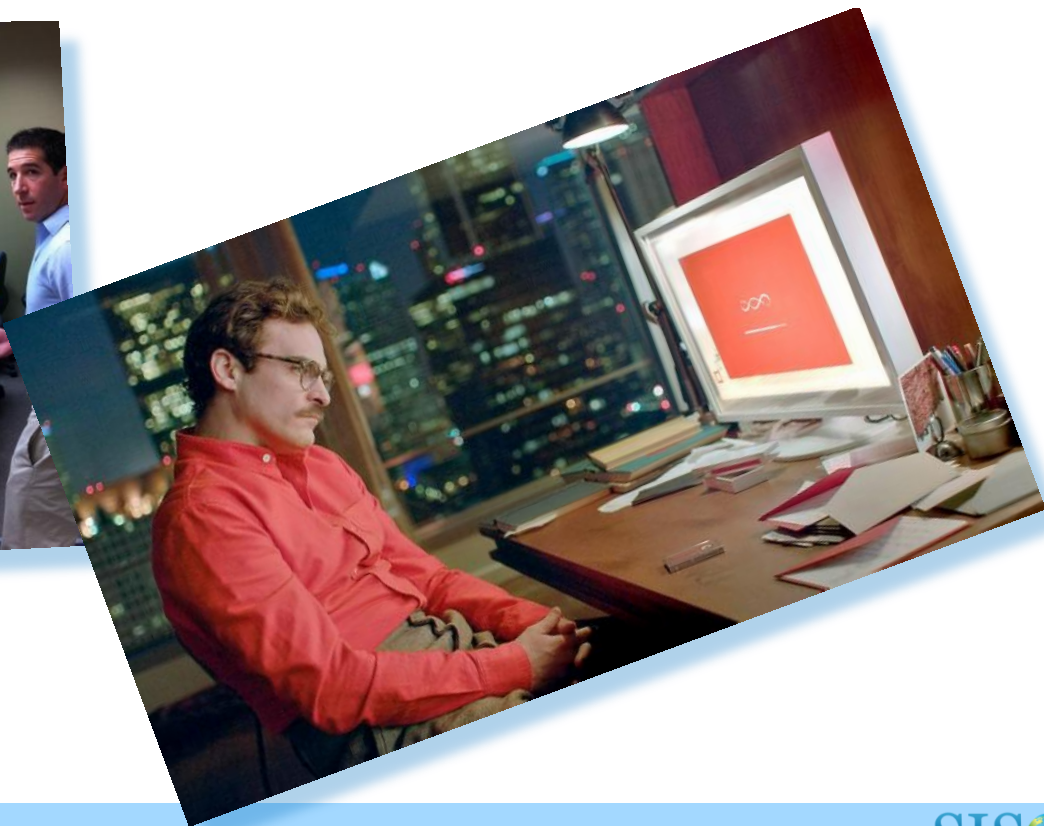
Percentage of Time Devoted to Writing and Speaking
Preliminary Local Straw Poll - Ranked Low To High

Profession	Degree	Writing	Speaking	Total
Navy Junior Officer (Subs)	BS	15	10	25
Research Group Leader	PhD	15	15	30
Retired	PhD	30	5	35
Industry Programmer	PhD	20	20	40
Coder	MS	35	10	45
Coder	BS	40	10	50
Army Lieutenant - Captain	BS	40	10	50
Recovery Room RN	BSN	35	25	60
Navy Electrician CPO	BA	40	20	60
Industry Manager	PhD	30	40	70
Research Manager	PhD	60	10	70
Navy Cryptologist CDR	BA	50	20	70
Research Project Mgr	JD	60	10	70
Navy Instructor CPO	BA	20	50	70
Coder	AA	60	20	80
College Instructor	PhD	40	40	80
Army Major - Colonel	PhD	60	20	80
Researcher	PhD	70	10	80
Navy Linguist CPO	BA	65	15	80
Tech Instructor	BS	10	75	85
Consultant/Manager	PhD	80	10	90
Means		42	21	63

Profession	Degree	Writing	Talking	Total
Navy Officer (Jr., Subs)	BS	15	10	25
Resch Grp Ldr	PhD	15	15	30
...				
Tech Instructor	BS	10	75	85
Consult/Manager	PhD	80	10	90
Means		42	20	62



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 formater
- 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



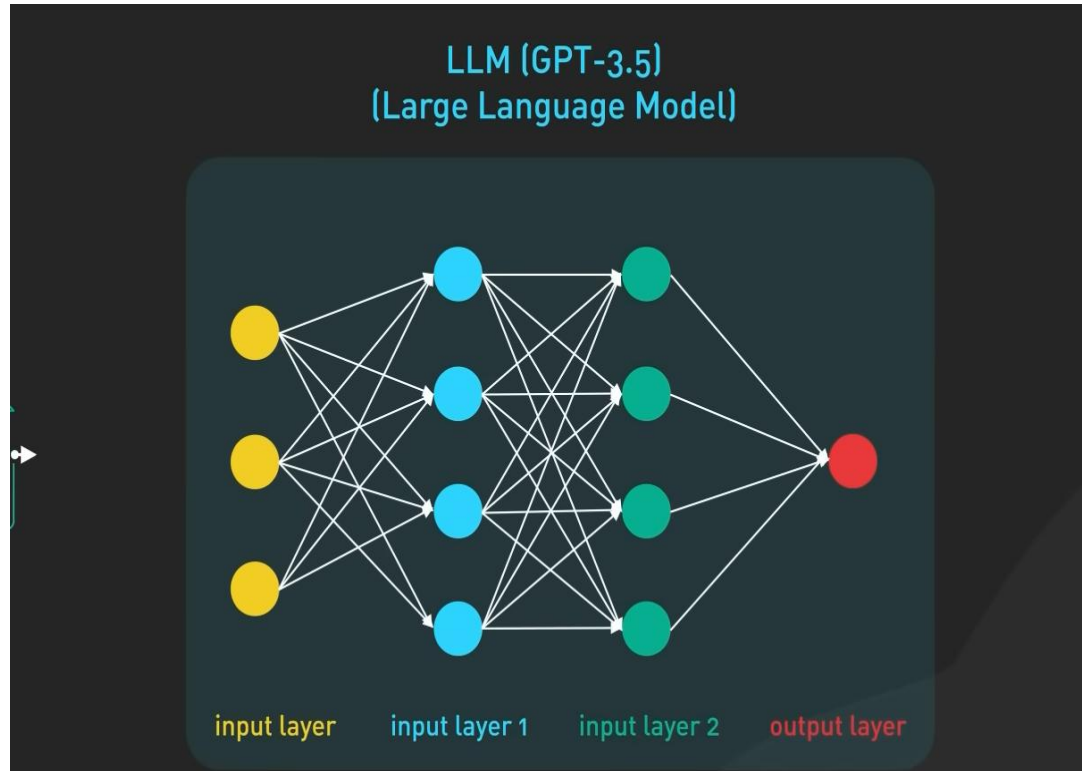
ChatGPT Overview Intro

- **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





Underlying AI





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 vs. cut and paste “authorship”)
 - Prohibited uses
 - 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