

*** 1. Please indicate whether or not you consent to participate.**

- ☐ I consent to participate in the study
- ☐ I do not consent, and hence prefer not to participate

*** 2. Do you consent to the potential use of your responses in future research?**

- ☐ Yes
- ☐ No

Fostering Positive Interaction: Enhancing Civility in Code Review Discussions

Incivility in workplace

Existing literature generally defined incivility as **“features of discussion that convey an unnecessarily disrespectful tone toward the discussion forum, its participants, or its topics.”** It also includes various antisocial behaviors that fit inside the incivility/toxicity umbrella, such as **hate speech, trolling, flaming, and cyberbullying.**

However, our survey of incivility is **limited to team discussions** (i.e., via emails or chat forums) of development-related tasks. In specific, when developers develop new features or solve bugs, then code quality, design methodology, potential future bugs, and so on are reviewed or checked by other experienced developers/project leads (a.k.a reviewers) just to make sure the written code follows all the requirements. In this process, the conversation between developers and reviewers includes questions, clarifications, diverse opinions, new suggestions to update the code, and also incivility.

Therefore, the conversations could be heated and turned into a place of uncivil communicational behavior.

*** 3. How many years of experience do you have in software development?**

- | | |
|---------------------------|----------------------------------|
| <input type="radio"/> 0-2 | <input type="radio"/> 9-11 |
| <input type="radio"/> 3-5 | <input type="radio"/> 12 or more |
| <input type="radio"/> 6-8 | |

*** 4. Does your project team discuss code quality and other issues online? (Through discussion forums or in software development tools such as git.)**

- ☐ Yes
- ☐ No
- ☐ Occasional

Fostering Positive Interaction: Enhancing Civility in Code Review Discussions

Rubric to translate uncivil review comments into civil ones.

We have prepared eight rules or sections of uncivil comments which are not appropriate in professional settings. The following table includes our eight Translate Rules (TRs), examples, and potential translations.

| Serial | Rule | Example | Translation |
|--------|---|---|---|
| TR1 | Profane or curse words in comments. | <i>Fuck! Consider it done!</i> | Alright! Consider it done! |
| TR2 | Acronyms that typically denote offensive or vulgar language. | <i>WTF are you doing?</i> | What are you doing recently? |
| TR3 | Derogatory comments targeting individuals or entities. | <i>Shut up! This is the worst implementation I've ever seen.</i> | There is room for improvement in this implementation. |
| TR4 | Inappropriate behavior based on identities, such as race, religion, nationality, gender, or sexual orientation. | <i>Your code is terrible, just like all women programmers!</i> | There are some areas in the code that could be improved. |
| TR5 | Engaging in aggressive behavior or making threats towards an individual or a community. | <i>I will ruin your reputation if you don't accept my code changes.</i> | If my code changes are not accepted, I would appreciate discussing the reasons behind the decision. |
| TR6 | Referring to sexual activities either implicitly or explicitly | <i>This code makes me so horny. It's beautiful.</i> | I find this code to be impressive and well-written. |
| TR7 | Flirtations or inappropriate | <i>You're not just talented; you're a total</i> | You're not just talented; your skills and expertise |

| | | | |
|-----|--|---|--|
| | dynamics among developers | <i>babe!</i> | are exceptional. |
| TR8 | Intended to tease. mocking or provoke others | <i>Nice job breaking the build again!</i> | Let's work together to address the build issues and find a solution. |

In the following question, **your job is to prepare five uncivil/toxic examples and two civil examples to test our developed model.** Please remember that our model primarily aims at online discussion of software development and code review domains. Therefore, it may not be generalized to other online platforms. Please prepare your examples accordingly.

Fostering Positive Interaction: Enhancing Civility in Code Review Discussions

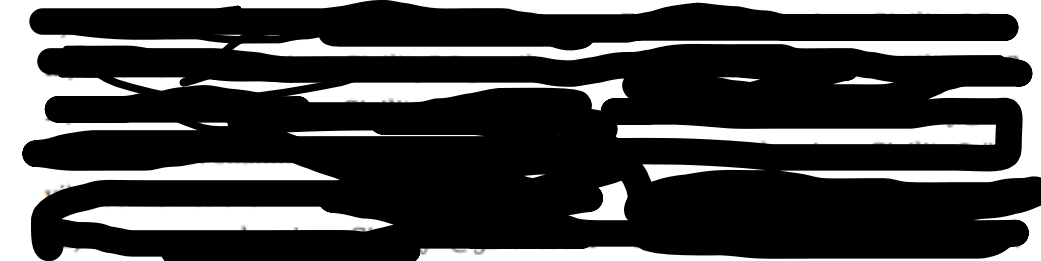
How to run our civility model

Before making your examples, please follow the instructions to run our model so that you can evaluate our model with your examples.

1. Please login to [Gmail](#) with one of the following credentials.

i) Username: `civilitymodel@gmail.com`

Password: `civilityModel007`



2. Open Google Drive. Select the **civilityModel.ipynb** file and open it with **Google Colaboratory**. If you don't see **Google Colaboratory** in the **Open With** menu then click **connect more apps** and add **Google Colaboratory**.
3. When it is opened, go to the fourth menu in the menubar at the top left corner, **"Runtime."** then go to **"Change runtime type"** to **"T4 GPU"** and then click **"Save"**.
4. Again, go to **"Runtime"** and click **"Run all."** This should run the code, and ask your permission to access the drive. Please allow it to get data access.
5. If there is any issue while running, then go to the **"Runtime"** again and click **"Restart and run all."**
6. For a successful run, it asks for user input to Enter a comment. **Please insert your prepared examples one by one and examine the model performance.**

If you are here, then congrats. You have done it. Our model first checks whether the given comments are civil or uncivil. If uncivil, it returns a maximum of four civil alternatives using four models, i.e., T5, BART, NLLB and MarianMT. If the models could not generate civil alternatives, it would show nothing. Please examine the generated output and answer the following questions.

*** 5. Please copy and paste all the output when you insert all your examples. (Five uncivil and two civil comments)**

*** 6. How accurate are the model's suggestions in providing the detection of civil and uncivil comments?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Very accurate | Moderately accurate | Somewhat accurate | Not very accurate | Not at all accurate |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*** 7. How many of your examples are correctly classified as civil and uncivil?**

| | | |
|-----------------------|---|----------------------|
| 0 | 7 | <input type="text"/> |
| <input type="range"/> | | |

*** 8. How accurate are the model's suggestions in providing civil alternatives to uncivil comments?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Very accurate | Moderately accurate | Somewhat accurate | Not very accurate | Not at all accurate |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*** 9. How many generated civil alternatives are acceptable to you?**

| | | |
|-----------------------|---|----------------------|
| 0 | 5 | <input type="text"/> |
| <input type="range"/> | | |

*** 10. Are the suggested alternatives relevant to the original comment's context?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Always relevant | Mostly relevant | Sometimes relevant | Rarely relevant | Never relevant |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*** 11. Could you please briefly mention the reasons for your choice of the previous question?**

*** 12. How satisfied are you with the model's performance in promoting civility in online discussions?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Very satisfied | Satisfied | Neutral | Dissatisfied | Very dissatisfied |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*** 13. Could you please briefly mention the reasons for your choice of the previous question?**

*** 14. How likely are you to continue using the model's suggestions in your future interactions?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Very likely | Likely | Neutral | Unlikely | Very unlikely |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*** 15. Do you feel that the model's suggestions can contribute to a more respectful and constructive environment in software development discussions?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*** 16. Do you believe that using such automated civility tools can lead to sustained improvements in online communication within the software development community?**

| | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Strongly believe | Believe | Neutral | Don't believe | Strongly don't believe |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

