OMERS "SMASHERS" Work Chat
Fall 2022
Unmuting Factum

Due Date: Monday, October 17th, 2022 at 11:32am

Background

On the date of October 17th, 2022 at 11:13am EST a shocking revelation was made; Gina a dear member of "SMASHERS" [1] muted the chat, much to the sheer anguish of Jonathan and myself.

As such this document seeks to prove the mathematical validity of keeping the chat unmuted, without loss of generality each proof with defiantly make the case of staying in the chat.

(Also I wanna point out how much of a pain it is to write in latex SMH)

[1] An entirely OMERS sanctioned business group which meets often about NFTs, and other Smash NFRS

0 Academic Integrity Declaration

I declare the following statements to be true, effective from the release of the aforementioned assessment until its due date and time:

- The work I submit here is entirely my own.
- I will not use/have not used any unauthorized aids to complete this assessment. Unauthorized aids include but are not limited to - the Internet - someone else's solutions or partial solutions NOTE: if you are unsure if something is unauthorized, check with course staff before using it.
- Because this is an assignment, I may discuss it with others but will not write, type, take pictures, or by any other means capture what occurred during the meeting and will/did wait at least 30 minutes before recording anything from that meeting.
- I have not and will not share in whole or in part email/files/documents related to the solutions of the assessment except possibly with course staff.
- I am aware that misconduct related to assessments can result in significant penalties, including, zero on the assessment, overall grade deduction and, depending on the significance of the assessment, failing the course and suspension (this is covered in Policy 71: https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71).

–> Student Quest username: r2knowle

1 Happiness Contrapositive

Currently, the premise that "muting the smash chat" can be described as the following first order logic function:

$$\sum = \{\forall x, \forall y(\neg G(x) \land \neg N(y) \implies \text{should mute}\}$$

Where $G(x)$ represents all instances where you are having fun, and $N(y)$ represents all the instances where you learn more about super secret guy lore. Moreover we can reduce this equation via contrapositive:

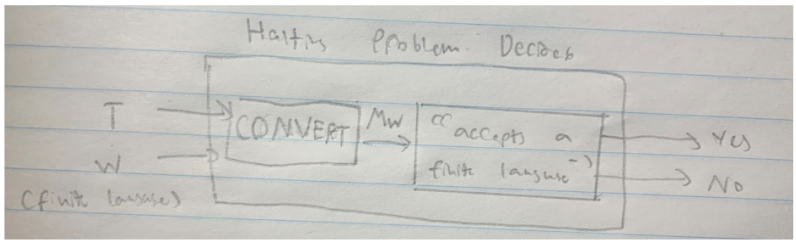
$$\sum = \{\exists x, \exists y(G(x) \lor N(y) \implies \text{should not mute}\}$$

Therefore since we know G(x) has been satisfied at least once, as you did have fun when Jonathan showed his lego batman mask, this logically and syntactical proves you should stay unmuted!

2 Halting Problem Proof

To prove this, we shall reduce this to the halting problem. Assume for the sake of contradiction that this problem is decidable; therefore, a decider (D) exists such that it takes in a machine and outputs if it accepts Gina muting the chat. This machine will look like:

If the machine does accept a finite language, it outputs yes and halts otherwise it outputs no and loops. Let's say that we have some candidates (M,w) for the halting problem, where w is some finite language. We can construct a new algorithm to decide the halting of M on w where CONVERT is a turning machine that takes M and w in as inputs and creates a machine (M_w) that is passed to the decider defined above:



This turning machine will halt on input w if M_w halts on the input of an infinite language. Thus because we have built a decider for the halting problem, this problem cant be decidable and thus Gina should keep that chat unmuted.

3 Pathos Appeal

Look at this silly goofy guy:

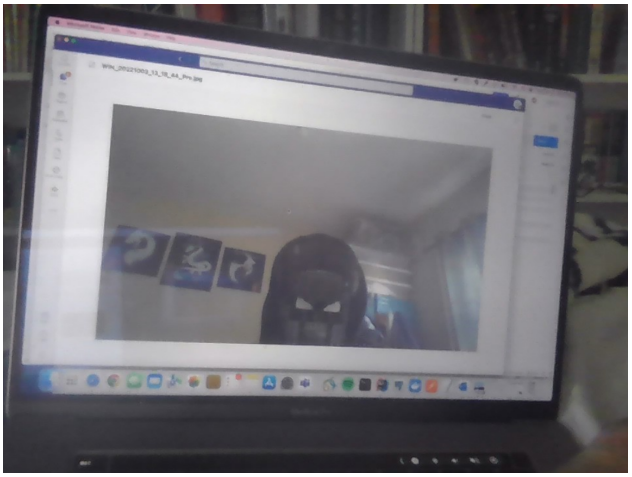


Figure 1: goofy fella.

Hint: he will be sad