

# REU-CAAR: You're Done!

William Gasarch-U of MD

**Thanks to All Involved:**

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**Clyde** He helped your talks be awesome!

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**Auguste** He was my helper!

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**Sharron** Budget, Rooms, Other Stuff!

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**Auguste** He was my helper!

**Sharron** Budget, Rooms, Other Stuff!

**Paul** Who brought cool and complicated games to game night!

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**Mentors** Who guided **your** brilliance with **their** expertise!

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**ALL OF YOU!** Without you ... there wouldn't be a program!

# Did the Program Achieve its Goals

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# Advice from You on How to Improve REU-CAAR

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# Improve Bill's Talks

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2. The Hat Problem: Use real hats.  
**Bill's Response** How about virtual hats?

# Improve Bill's Talks (Part 2)

1. The Muffin Problem: Need more variety of Muffins.

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**Bill's Response** Next summer: 61 muffins for 19 people, cut so that everyone gets  $\frac{61}{19}$  and the smallest piece is  $\frac{313}{684}$ .

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**Bill's Response** Erin S believes this.

# Improve Nick Talk About AI

**Quote** Nick seemed do think that it was funny to bullshit.

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## **Solution**

He should Retitle it:

# Improve Nick Talk About AI

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## **Solution**

He should Retitle it:

**How to talk a lot but say a little: AI Edition**

# The Quantum Talks

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**Also** See Next Slide.

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I'll have a few more talks, but **not** a talk **every** week.

# An Idealist!

## Quote

I wish talks from industry were using CS to make a positive impact on the world.

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## Quote

I wish talks from industry were using CS to make a positive impact on the world.

## Response

I wish people from industry were using CS to make a positive impact on the world.

# Food!



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**Rowan** Why are the extra lunches always at Potomac Pizza?

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**Rowan** Finally a quote you won't claim for your own!

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Speaking of which. . .

# Rowan's Rap Song: Who First Said

Who first said



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Who first said who first said who first said

I did, when Bill said who first said

(cont next slide)

# Rowan's Rap Song: Who First Said

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And who first lead a group of us to the end of the road where the  
muffin man goes every so often to get pizza for those

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Bunches of markers are bunches of gold.

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(Cont on next slide)



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Knowledge grows exponentially.

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Not robots, not chatbots, not mechanazis, paparazzis! Pepperoni?

That's a topping!

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Nothing to lose,

Distracting us from all the brilliant research we should go and do!

# Rowan's Rap Song: Who First Said (cont)

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Now I once drew a face of a man on that wall, "Please don't erase it"

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When code doesn't compile, or we can't figure out how to use LaTeX,

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Ask how many boba tea shops there really are in outer space.

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# Pay Students

**Begin Rant**

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SHOW ME THE MONEY

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# Upshot of Student Comments

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**Quote** If I could to back in time and to REU-CAAR again, I would do it again.

**Response** Glad to hear it! Sounds like a terrible idea for a science fiction story.

# REU-CAAR Projects for Next Summer

William Gasarch-U of MD

# Next Summer's Projects

**Bill and Victor**



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**Bill and Victor**

**Project** Quantum Ramsey Theory.

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Am I serious about working on this? **Uncertain.**

# Next Summer's Projects (cont)

## A New Project:

# Next Summer's Projects (cont)

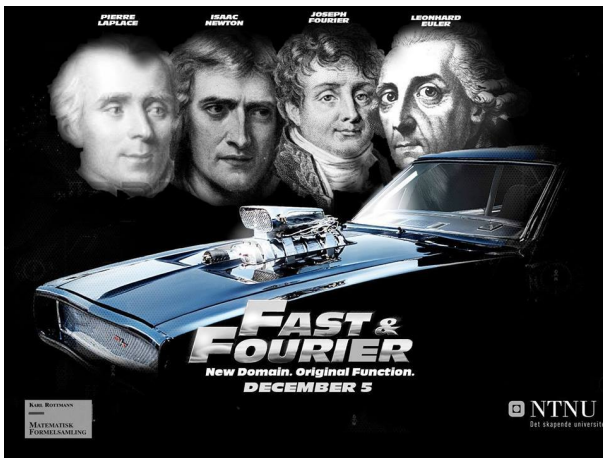
**A New Project:** Funded by **The Winkler Foundation**

# Next Summer's Projects (cont)

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# Next Summer's Projects (cont)

**A New Project:** Funded by **The Winkler Foundation**  
**Computing Fast Fourier Transforms:**



Mentored by **Aviva 'Vin Diesel' Prins**



# NLP on Funny vs Offensive

Can an NLP make the following judgments

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If Bill calls **June** by the name **Jane**

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**ADRIANA: Thats bullshit man!**

# A Mathematical Psychology Project on Gullibility

See which of these statements students will believe.



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# AI Project on Question-Answer Programs

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► Mostly

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- ▶ Mostly
- ▶ Excellent



# AI Project on Question-Answer Programs

- ▶ Mostly
- ▶ Excellent
- ▶ Geometric

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Project is in phases:

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Project is in phases:

1) First Phase: Train M.E.G.A.N. to play the trumpet.

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Project is in phases:

- 1) First Phase: Train M.E.G.A.N. to play the trumpet.
- 2) Second Phase: Train M.E.G.A.N in Euclidean geometry

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Project is in phases:

- 1) First Phase: Train M.E.G.A.N. to play the trumpet.
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- 3) Third Phase: Train M.E.G.A.N in Hilbert geometry.

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# REU-CAAR and Other Programs

William Gasarch-U of MD

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- ▶ **AWWWWWWWW**

# Should the NSF Renew the Grant?

**PRO** We ran a program with no NSF money.

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**BILL** How young are you? But anyway, YES, you can be on the grant when we apply for a renewal.

**ERIN** Cool!

**BILL** Is that what you mean by Chill?

# IS REU-CAAR is Chill?

Yes.

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**Yes.** But is this good or bad?

# IS REU-CAAR is Chill?

**Yes.** But is this good or bad?  
Next slides discuss this.

# REU-CAAR is Chill: PROS and CONS I

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**CON** TREND never came to any of our activities, TRAILS bailed on our talks.

# REU-CAAR is Chill: PROS and CONS I

1) We minimize formal obligations.

**PRO:** Less formal meetings, more research

**CON:** Sometimes students are undirected.

2) Projects flexible: Aviva's project stopped caring about Indian Farmers the first week.

3) Number of students on a project is flexible: Auguste-9, Victor-1. Some REU's are strict: **5** projects with **2** people EACH.

4) Relaxed about people going to lunches, talks, game days.

**PRO** I treated the REU students with respect. They respected that and went to activities unless there was a good reason not to.

**CON** TREND never came to any of our activities, TRAILS bailed on our talks.

**CAVEAT** Not my circus, not my monkey.

# Predictions

William Gasarch-U of MD

# Predictions

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In the future

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# Predictions: EGOT

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- ▶ Exactly one of Auguste, Bill, June will get an **EGOT** (**E**mma, **G**rammy, **O**scar and **T**ony).
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- ▶ WAIT-there is an objection to the choice.

# Someone Else Should Win an EGOT

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**SOREN** Thats bullshit man! I should get an EGOT.

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**BILL** You're a 1-dim character with one catch phrase.

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**BILL** Whats the other reason?

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**BILL** Okay. You'll win an EGOT as follows:

# Soren's EGOT

# Soren's EGOT

Your TV series:



# Soren's EGOT

Your TV series: **Thats Bullshit Man.**

# Soren's EGOT

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Your TV series: **Thats Bullshit Man.**

Your Movie: **Thats Bullshit Man.**

Your Grammy:

# Soren's EGOT

Your TV series: **Thats Bullshit Man.**

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Your Tony:

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**BILL** That way to get an EGOT is bullshit man!

# Yasmine's EGOT

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# Back to Predictions

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An AI will be built that can direct an REU program.

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We already have one.

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An AI will be built that can direct an REU program.

We already have one. Next Slide

# Automated REU Director

# Automated REU Director

► Automaton

# Automated REU Director

- ▶ Automaton
- ▶ Used to



# Automated REU Director

- ▶ **A**utomaton
- ▶ **U**sed to
- ▶ **G**et

# Automated REU Director

- ▶ **A**utomaton
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A.U.G.U.S.T.E

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But there are still some bugs in the program.

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A.U.G.U.S.T.E

But there are still some bugs in the program. See next slide.



# Prediction for A.U.G.U.S.T.E

A.U.G.U.S.T.E thinks REU directors do the following:

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A.U.G.U.S.T.E thinks REU directors do the following:

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2. **Making Pizza**

# Prediction for A.U.G.U.S.T.E

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2. **Making Pizza**
3. **Eating Pizza**

# A.U.G.U.S.T.E

Using reinforcement learning A.U.G.U.S.T.E will learn that being an REU director involves:

# A.U.G.U.S.T.E

Using reinforcement learning A.U.G.U.S.T.E will learn that being an REU director involves:

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Using reinforcement learning A.U.G.U.S.T.E will learn that being an REU director involves:

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2. Doing admissions.

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2. Doing admissions.
3. Organizing Lunches, rooms, activities, talks.



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2. Doing admissions.
3. Organizing Lunches, rooms, activities, talks.
4. Coordinating with other programs.

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5. Playing the Mayan Calendar Game.

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**Prediction** A.U.G.U.S.T.E: will be a **Great** REU director.

# Academic Predictions

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In the spring of 1985 my advisor (Harry Lewis, Harvard) asked me what I dreamed of doing in the next 40 years. I said:

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**Thank you REU-2025 for making my dream come true!**

# Wrap This Up and Lets Hear From You!

William Gasarch-U of MD

# Lets Wrap this Up

1. Positive thoughts or stories about the program.
2. Tell me something interesting.

I'll go first.

# Positive Things About the Program

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I'm right and he's wrong.

# Interesting Fact One

In the form of a question:

What do the following people have in common:

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1. Actor Clint Eastwood

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4. Fictional Cartoon Character Steven Universe.

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2. Actor Leo DiCaprio
3. Queen of all Media Oprah Winfrey
4. Fictional Cartoon Character Steven Universe.

Answer on Next Slide



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**Side Note** Stage names are often middle names followed by a street you live on. For me this works great:

**William Gasarch** becomes **Ian Marlow**. Awesome!

## Interesting Fact Two

On TV many people who are not cops are really good at solving crimes:

We list them by category.

# By Occupation

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1. Priests (Father Brown, Father Dowling).



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6. Psychopaths (Silence of the Lambs)
7. Stage Magicians (The Magician-it lasted only one season)

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3. Deaf FBI agents (Sue Thomas. Actress is deaf!)
4. Fat private Detectives (Cannon, Jake and the Fat Man. Actor is fat!)



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## 1. The Devil (Lucifer)

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There are many more parodies of **Hamilton**.

# Your Turn

I will call on everyone. They will tell me

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I will call on everyone. They will tell me

1. Something positive about the program.



# Your Turn

I will call on everyone. They will tell me

1. Something positive about the program.
2. Something interesting.