REU-CAAR:
You're Here!

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Research **E**xperience for **U**ndergraduates-

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We'll say more about the name later.

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Auguste: Why are you telling them all that?

Bill: In academia its very important to credit past work!

Purpose of This Talk

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1. Who are the mentors?

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5. What should you expect of us?
6. Nuts and bolts of how the program works.
7. Advice on how to get the most out of this summer!

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Applying Theory to Practice.

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Systems, **HCI**, **Software Engineering**, anything else?

REU-CAAR: Projects, Mentors, Students!

Algorithms Projects

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Space Efficient Parallel Algorithms.
Mentored by Laxman.

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Fun Fact Auguste has 11 siblings: Januarye, Febuarye, ..., Decembere.

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Retrospective analysis and improved methods**

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ML/AI Projects

Machine Learning For Autonomous Driving: Theory and Practice Mentored by Ming.

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Ming: First-timer for REU-CAAR but has mentored many ugrads.

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We make it work!

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Crop Planning Dec. Support with Multi-Agent RL
Mentored by Aviva.

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AVIVA: I want to mentor a project for REU-CAAR.

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BILL: Whats that like?
That is, whats it like to want to help people?

Quantum Projects

Symmetries, Defects and Boundaries of Bicycle Codes
Mentored by Victor and Dominic.

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Mentored by Yuxin and Yifan.

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Both are first timers but have mentored students before.

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1 Student: Aranav (UMCP)

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Elevator Pitch More Quantum Error correction.

Quantum Projects (cont)

Qutrit Quantum Quadratic Residue Codes

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The QEC projects will be in contact with each other.

Quantum Projects (cont)

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Robust Bell Sampling

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At least practical compared to most of Quantum Computing.

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An Apparatus for Quantum Simulation with Dipolar Quantum Fluids

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Find another system that is similar to it either simulate it or even look at it directly.

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This project will do that with laser cooling and trapping of atoms.

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(But Atoms are so tiny!)

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- **Help with Final Presentations:** Clyde.

REU-CAAR:
Very Brief History

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- ▶ Ramsey Theory
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- ▶ Algorithmic Game Theory

2017-2024

Big change. Projects in the fields above but also

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1. Grants are for 3 years. Original grant was 2013-14-15.

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   Team Work, Communication,

Program Goals

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   Work on problems where the answers are **not** already known.

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3. You should **want** work on your projects after hours.

What the Program Expects of You: Restart

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Your Mentor's Role

1. **Role modeling:** Their experiences offer clues for your own professional success story.

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4. **Connection:** Help connect you to their colleagues, graduate assistants, others.

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Credit Auguste thought of making the first letters spell words.

Issues that Probably Won't Arise But Need to be Discussed

Sexual Harassment and Discrimination

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2. While this slide is about Sexual Harassment and Discrimination, feel free to talk to **Bill**, **Laxman**, **Auguste**, or **Aviva** about **any** issue, even if it is uncomfortable.

My Least Favorite Topic

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Good News That You Know:

1. You get a mentor(s).

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What is 'your part':
SPACE AGE and **CAMERA**

Complain SOONER Rather than Later

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its finding whose to **Blame :-)**

Most Common Complaints

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Upshot Communication!

Schedule and Activities

First Week++ Talks

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For some of the projects p

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In symbols

$$(\forall p)(\exists m, d)[MENTOR(p, m) \wedge TALK(p, m, d)].$$

First Week - Lunch

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4. Bill will join you for lunch some of the first week.

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3. Research-Every day.

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Explore Washington DC On Your Own AND

1. Those of you that are locals please help the out-of-towners.

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Explore Washington DC On Your Own AND

1. Those of you that are locals please help the out-of-towners. (This year there are 18 locals and 7 out-of-towners.) Sergey Brin was a UMCP undergrad, so use **Google** maps.

2. Weekends: visit Washington DC.

3. Go to the Whitehouse and say hello to **President Trump**. Ask him to fund us next year so that **Auguste** does not have to live in a cardboard box.

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   Space Efficient Parallel Algorithms

College Park Metro Station

There is a Metro Stop in College Park.

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Check: There are websites that have metro information- check them before any excursion.

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   (Is that a paradox? A project for Summer 2026 REU.)

Funding

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Irwin Winkler

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Bill Gasarch's Mother is Pearl (Nee Winkler) Gasarch

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Irwin Winkler is a producer in Hollywood.

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Irwin Winkler is a producer in Hollywood.

1. Produced over 50 movies
2. Directed 7 movies
3. David Selznick Lifetime achievement award for producing
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Why am I telling you this?

The Winkler Foundation

Irwin Winkler has established a charitable foundation that gives money to

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Irwin Winkler has established a charitable foundation that gives money to (a) many worth causes and (b) our REU!

Adam Winkler

Adam Winkler is Irwin's son who administers the foundation.

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We the Corporations: How American Businesses won their civil rights
The last book got this review
It is deeply shocking that We the Corporations **is not boring.**

Also, the last book was a nominee for the **National Book Award**.

Show me the Money!

Where Does the Winkler Money Go?

Things the NSF won't pay for:

- The REU Lunches.

Show me the Money!

Where Does the Winkler Money Go?

Things the NSF won't pay for:

- ▶ The REU Lunches.
- ▶ Misc.

My Wife Says that if I Lie to You I Must Tell You

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Qutrit Quantum Quadratic Residue Codes

Questions from You?

I welcome questions now and anytime!