REU-CAAR: You’re Here!

William Gasarch-U of MD
Credit where Credit is Due

Origin of this talk
- Bill G modified this *boring* handbook into a *fascinating* 50-slide talk!
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_Samir:_ Why are you telling them all that?
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**Samir:** Why are you telling them all that?
**Bill:** In academia its very important to credit past work.
Purpose of This Talk

1. Who are the mentors?
2. What are the projects?
3. What is expected of you?
4. What should you expect of us?
5. Nuts and bolts of how the program works.
6. Advice on how to get the most out of this summer!
REU-CAAR

**REU:** Research Experience for Undergraduates.

**CAAR:** Combinatorics And Algorithms for Real Problems.
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The Title Encompasses...
REU-CAR

REU: Research Experience for Undergraduates.
CAAR: Combinatorics And Algorithms for Real Problems.

The Title Encompasses... All of Computer Science!
1. **In Charge:** William Gasarch and Samir Khuller.

2. **Your Mentors:**
   
   2.1 Explainable AI: Celeste P, Sarah J, Randall R, Tudor D.
   2.2 Side Channels in the Cloud: Dana D-S
   2.3 Diversity in Matching Markets: John D
   2.4 Finding Colorings using Opt Techniques: Tom G & Clyde K
   2.5 Modeling signals with Deep Neural Networks: Tom G
   2.6 Crypto Analysis for Lattice-Based Cryptography: Jon K
   2.7 Approx Algorithms: Samir K
   2.8 Clustering Algorithms: Samir K
   2.9 Trial and Error Graph Properties: Aarthi S
REU-CAAR TEAM

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3. **Admin:** Jennifer Arseneault, Adelaide Findlay, Jodie Grey, Sharron McElroy,
Program Goals

1. **Research!** What is Research? Discuss!

[Work on problems where the answers are not already known.]

[Exposure to a variety of career paths. Discuss! Grad school, industry, other.]

[Build skills. Discuss! Team work, Communication, Project Management.]

[Build a network with faculty and students. Discuss! Useful for the future!]
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   useful for the future!
What the Program Expects of You

1. Show up every weekday. On time and sober. 10:00AM-4:00PM

2. Actively contribute to your research project and your team.

3. Check e-mail. Reminders, notices, requests will be emailed.

   (I hyphenated email? Why? The original handbook did this and I wanted you to see an interesting piece of history.)

4. Attend lunches, talks, and other activities.

5. Participate in assessments such as surveys.

6. Present at Joint Presentations with Salisbury REU (July 25)

7. Present at the End (Aug 8,9)
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2. **Time:** Explain the project, answer questions, listen to your concerns and ideas, etc.

3. **Background:** Explain *why* the research is important! How it fits into other things!

4. **Connection:** Help connect you to their colleagues, graduate assistants, others. You will learn as much from them (or more!) as you do from your research tasks!
What Faculty Mentors Expect from You

1. **Enthusiasm:**
   - Be interested in the project, field, and topic.
   - Become familiar with background literature.

2. **Assertiveness:**
   - Think for yourself and support your own ideas.

3. **Adaptability:**
   - Be flexible/open minded.

4. **Maturity:**
   - Be reliable, and cooperative. Own your mistakes.

5. **Communication:**
   - Be clear in verbal & written communication.
   - Seek clarification, ask questions, provide suggestions.

6. **Responsible:**
   - Tell team changes that affect your participation.

7. **Be Bold/Curious:**
   - Be Bold and Curious!

8. **Respect:**
   - Resolve issues quickly, directly, and respectfully.
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Sexual Harassment and Discrimination

(My second least favorite topic.)

1. Ask other REU members about their perceptions of the behavior. If their perceptions are similar then next step.

2. Speak directly to the individual in a respectful manner. This will let you immediately know if the different treatment is a misunderstanding or a major problem. Keep in mind the potential personal consequences of confronting the individual.

3. If you feel uncomfortable, seek advice and guidance from others. Bill Gasarch or Samir Khuller can offer assistance and direct you to campus resources for help.

4. While this slide is about Sexual Harassment and Discrimination, feel free to talk to Bill Gasarch or Samir Khuller about any issue, even if it is uncomfortable.
1. Mon 10:00-12:00 THIS TALK!
2. Tue 10:00-12:00 Bill The Muffin Problem
3. Wed 11:00-12:00 Samir Clustering and Large Ind Sets
4. Thu 11:00-12:00 Sarah Explainable AI
5. Fri 3:00-4:00 John Diversity in Matching Markets
6. Mon 3:00-4:00 Aarthi Trial and Error Graph Props
7. Tue 3:00-4:00 Dana Side Channels
8. Fri 11:00-12:00 Jon Lattice Based Crypto
First Week - Lunch

1. Monday 12:00-1:00 lunch in AVW.
2. This lunch you will play telepictionary!
3. Tue,Wed,Thu,Fri- Lunch in the union from your meal card.
4. Bill will join you for lunch some of the first week.
First Week

1. Red Tape in the morning (hopefully ends Wed).
2. Red Tapes some afternoons (hopefully ends Wed).
3. Research—Every afternoon.
Most Weeks

1. Get here by 10:00AM goto your projects room.
2. Research 10:00-12:00 (approx)
3. Lunch 12:00-1:00 (approx). MONDAY lunch AVW
4. Research 1:30-4:00.
5. Talks on Wednesday afternoons.
6. Every other Friday you get your paycheck!
7. At night talk about
   Explainable Side Channels for Diverse Colorings
   Modelled by Crypto Data for Graph Properties
8. On your own on weekends— Explore Washington DC!
Explore Washington DC On Your Own AND

1. Three of you are locals (Nittin, Josh, Chris)- show the others around!
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2. Weekends you SHOULD visit Washington DC.
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2. Weekends you SHOULD visit Washington DC. Goto the Whitehouse and say hello to our President!
Explore Washington DC On Your Own AND

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2. Weekends you SHOULD visit Washington DC.
   Goto the Whitehouse and say hello to our President!
   Goto one of the Marches (I went to the Science March!)
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   Goto the Whitehouse and say hello to our President!
   Goto one of the Marches (I went to the Science March!)
3. Samir will take you hiking (possibly June 9).
Other Things We Will Do

1. Field Trip at Spy Museum (Prob a Monday in July)
2. Lunch where we discuss How to do Bad Science.
3. REU-Salisbury joint day July 25.
5. Game Nights with Pizza! (one or two or three)
6. Unexpected things will happen! Always expect the unexpected! (Is that a paradox?)
Discuss- what do you think is my least favorite topic?
My Least Favorite Topic

Discuss- what do you think is my least favorite topic?

**Good News That You Know:**

1. You get $5000 Stipend.
2. You get free room and a meal card.
My Least Favorite Topic

Discuss- what do you think is my least favorite topic?

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If you do not live up to your end of the deal
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If you do not live up to your end of the deal
You could be asked to leave, which will mean you get less of your stipend. RARE! But it has happened and it has to be said.
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What is ‘your end of the deal’:
Discuss- what do you think is my least favorite topic?

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What is ‘your end of the deal’:
Discuss.
Celeste-Sarah-Randall-Tudor Explainable AI

1. Nitin Balachandra
2. Josh Twitty
3. Chris Alexander
Dana’s Side Channels

1. Michael Davinroy
2. Kevin Kulda
3. Ian Rackow (HS student)
John’s Diversity (2 projects?)

1. Ahmed Albahhar
2. Darshan Chakrabarti
3. Naveen Dursula (HS Student)
4. Naveen Raman (HS Student)
5. Yuhao Wan
Tom and Clyde’s Coloring Project

1. Qiran Dong
2. Daniel Hofman
3. Grace Harper
Tom’s Modeling Project

1. Lara Shonkwiler
2. Kathleen Morrison
3. Xinyi Wang
Jon’s Crypto (2 projects?)

1. Eric Brigham
2. David Van Cleve
3. Daniel Hathcock
4. Jeremy Kleitman
5. Jennefer Maldondo
6. Benjamin Sela
7. Matthew Soulanile
Samir’s Approx

1. Laurel Newman
2. Sam Estep
Samir’s Clustering

1. Michael Zlatin
2. Tanvi Bajpai
Aarthi’s Trial

1. Thomas Schneider
2. Aditya Saraf
1. There are 22 HS students who will be joining us on some activities.
2. The number 22 might change as some drop out.
3. Bill G is mentoring 14, Clyde 3, Tom G 2, Dana 1, Samir 1.
4. Projects: Factoring, Randomized Algorithms, Muffins, Can’t Stop Game, Hat problems
Complain SOONER Rather than Later

Last year there was only TWO serious complaint:
Complain SOONER Rather than Later

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Mentors need to give more direction
Complain SOONER Rather than Later

Last year there was only TWO serious complaint:

Mentors need to give more direction
One of our Teamates isn’t doing his Part
Better to get a problem resolved EARLY, whatever they are.
Complain SOONER Rather than Later

Better to get a problem resolved EARLY, whatever they are.

Key to a good relationship:
Complain SOONER Rather than Later

Better to get a problem resolved EARLY, whatever they are.

Key to a good relationship:

In any problem or dispute that arises the important thing is
Complain SOONER Rather than Later

Better to get a problem resolved EARLY, whatever they are.

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NOT fixing it and making things work out
Complain SOONER Rather than Later

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Key to a good relationship:

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its finding whose to Blame :-}
Who is Funding This?

1. National Science Foundation (NSF).


3. Jon K and Tom G had some spare change.


6. Other Schools mini-grants.

7. Goldman Sacks/Marty Chavez.

8. The Winkler Foundation.

Who are they?
Who is Funding This?

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4. Google/An Zhu. This makes sense.
5. Ocular/Brendan Iribe (A VR Company). This makes sense.
6. Other Schools mini-grants. This makes sense.
7. Goldman Sacks/Marty Chavez. What?
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Bill got his PhD from Harvard in 1985 with Advisor Harry Lewis. At Harry’s 70th Birthday Conference Bill ran into a student he had TAed named Marty.

**Bill:** So Marty, what are you up to?

**Marty:** I’m the Chief Financial Advisor for Goldman Sacks.

**Bill:** Can you spare some money for my REU program?

**Marty:** Sure.

**Bill:** Gee, fund raising is easier than I thought!
Bill Gasarch’s Mother is Pearl (Nee Winkler) Gasarch

Pearl Gasarch’s Brother is Irwin Winkler

Irwin Winkler is a produce in Hollywood.

1. Produced 55 movies
2. Directed 7 movies
3. David Selznick Lifetime achievement award
4. Produced Rocky++, Goodfellows, Creed

Why am I telling you this?
Irwin Winkler has established a Charitable foundation that gives money to many worth causes AND to our REU!
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Adam Winkler is Irwin’s son who administers the foundation. He’s a law professor so he gets academia. (The other two sons are in the biz.)
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Where Does Goldman Sacks and Winkler Money Go? To Lunches and other things that NSF won’t pay for.
Questions from You?

I welcome questions now and anytime!