ADVISING & SUPERVISING STUDENTS

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ICSE'18 New Faculty Symposium

A little about me

- People Aspects of Software Engineering
  - Engineering Gender-Inclusive Software
  - End-User Software Engineering
  - Information Foraging by Developers
- Professional "high"s:

> "The moment that stood out for me: Dr. Burnett … interested in working with me in the future."

- Personal "high"s

GROWING YOUR RESEARCH STUDENTS

The Faculty Job & Your Students

- Woo hoo, you got a faculty job!
- **Tip #1:** Now you need research students.
  - **Tip #2**: And you need to start them growing.
- My path:
  - Taught a grad class on my topic.
  - Started reading group for credit
    ➔ survey paper.
  - REUs too.
  - Recruited from the class/group.
- Action? (how many past this stage?)

4

Action plan: Get/grow (5 minutes)

- Pair up, make your plan on:
  - Grow: <u>What</u> you're going to TEACH next to grow them
    - OR
  - Get: From <u>where</u> you'll RECRUIT your next grad/REU.

- Reminders from "My path":
  - Taught a grad class on my topic.
  - Started reading group for credit ➜ survey paper.
  - Recruited from the class/group.

Research Students' Productivity (REUs & Grad students)

- **Tip #3**: Pay them!
  - $ or credits.
  - That way, they owe you, and must progress.
- **Tip #4**: They work for <u>you</u>.
  - Agenda, and assign from it.
- **Tip #5**: Pair them up!
  - Co-author, pair-program, etc.
  - They'll learn more, stay more on track, sap less of your energy.

Action plan: Pay/assign/pair (5 min.)

- Talk about:
  - Pay: <u>What</u> are you going to pay them with?
    - OR
  - Agenda/projects: What are you going to <u>assign</u> next to manage your number of "threads"?
    - OR
  - Pair: How can you pair them to make your <u>students better</u> and your life more sane?

Research Students' Productivity

GenderMag tool+... (...nah)

- ICSME '16?
  - David-IFT paper i...
  - Tahmid's paper o...
  - some VFT paper...
- ICSE'17 (deadling A...
  - ? a GenderMag p...
  - another Sruti/Sha...
- CHI'17 (deadline Sep...
  - ? a GenderMag ...

...an, Taylor, maybe others
...author. Peggy probably
...might send to FSE or ICS...

...)

...e to CHI instead?)

- Papers count:
  - David: 6
  - Will: 2
  - Charles: 4
  - Sruti: 5
  - Sean: 2
  - Bhargav: 2
  - Amber: 2-4
  - Taylor: 2
  - Shannon: 1-3
  - Chris: 4
  - Alannah: 2-4

- Help them w...
  - **Tip #7**: Cull ... p!

DUD!

COMMUNICATIONS
TO STRETCH YOUR STUDENTS

Communications
(REUs, Grad students, Class students)

- **Tip #8**: To the "dud":

"How do <u>you</u> think it's going?"

- Exercise (5 min.):
  - practice culling a dud.

Communications
(REUs, Grad students, Class students)

- **Tip #9**: When discouraged:
  - "The brain is a muscle."
    - (with specific guidance)
  - "I'm stretching you."
  - "This takes a long time. It took <x> forever to get here."
  - "If you already knew how to do this stuff, why would you need me/school?"
- Practice (5 min.)

Communications
(REUs, Grad students, Class students)

- **Tip #10**: To the undiscovered great student:
 - "Have you ever considered grad school?"

"The moment that stood out for me: Dr. Burnett ... interested in working with me in the future."

RESEARCH UNDERGRADS

Tip #11: Get REU-in-a-box
www.ncwit.org/reubox

- Research Experience with Undergraduates.

- An In-a-box is a "kit".

- This In-a-box supports:

  – Hands-on.

  – One-on-one research experience.

  – Guided by a faculty member.

    - With just the faculty member

    - Or in a small team (faculty member, graduate students, one or two REUs).
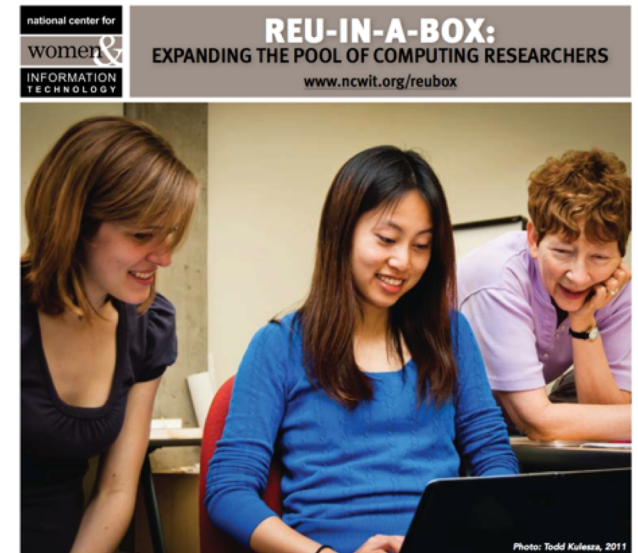
Section 1.3 Why important: To students and to CS/IT?

- Engagement:
  - Hands-on research engages students in their undergrad degree.
- "Trying it on":
  - Helps students consider grad degrees & research.
  - Want the best students to consider <u>all</u> their options.
- Personal:
  - Helps *retain* and *recruit* women and underrepresented groups in CS/IT.
- Help with CS/IT diversity
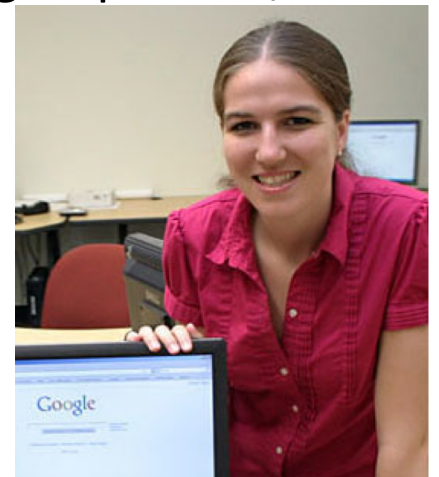
"My research experience is the reason I'm here today."

Section 1.4 Why should <u>you</u>? (Yes, even pre-tenure!)

- Productivity:
  - Get work done on <u>your</u> research agenda.
- Relationships with:
  - Tomorrow's top researchers.
  - Pretrained grad students.
- Grant money!
  - NSF "broader impacts" points for your grants.
  - Financial support is available for REUs.
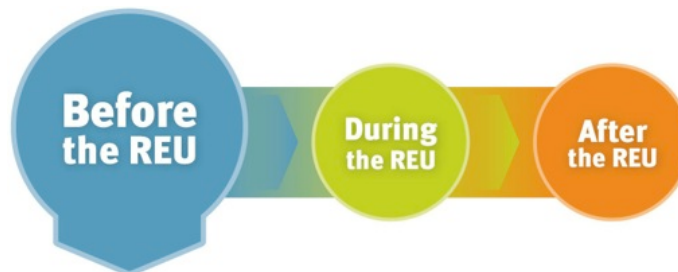
Section 2: Before the REU

Who will fund?

How much time?

What will we do?

How to find students?

Managing expectations?

See Section 2 of REU-In-A-Box!

Before the REU

During the REU

After the REU

Section 2.5-2.6, 6.3: Managing Expectations

Faculty:

Explain what research is.

Select a 'right-sized' project.
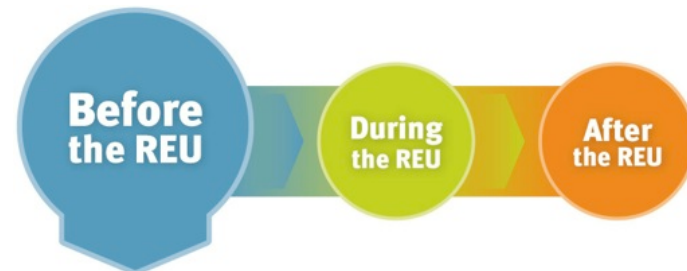
COMMUNICATE expectations early!

Plan how you want to structure the project.

Students:

With a research mentor whose interests match yours.

Research not as clearly defined as classroom problems.

SPEAK UP! If you don't understand something, bring it up and discuss.

Section 3: During the REU

- Team building -
  - communication
  - accountability
  - group and professional skills
- Management challenges

See Section 3 of REU-In-A-Box!

Before the REU → During the REU → After the REU

Section 4: After the REU

- Post-REU self- assessment (student).

- Post-REU self-assessment (faculty).

- Leveraging the REU: next steps.

Sections 4.1, 6.8:
Students Leveraging the REU

- Update their resumes!
  - REU experiences look great!
- Coauthor a paper or poster on their research.
  - eg, at a conference.
- They're in a good position to apply for:
  - travel scholarships to conferences.
  - undergrad (or grad) scholarships/fellowships.
  - paid research opportunities at other locations.
- Think about grad schools.

Before the REU During the REU After the REU

Where are they now?
The "babbits""
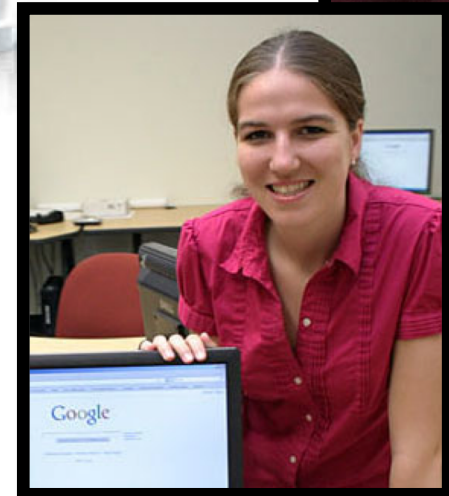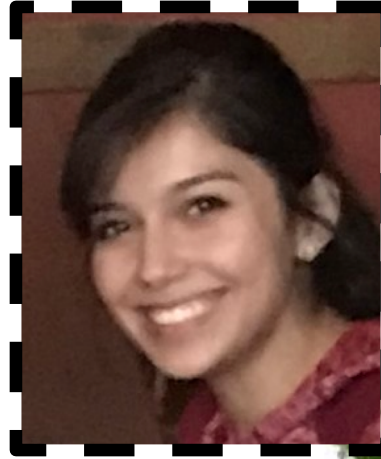
FINAL REMARKS

Help Your Students Soar!

- Students + professor = team!

- When one looks good, all look better!

- How:
  - Nominate for an award.
  - Place them in great internships
    - align with their career goals.
  - Make them try for opportunities.

- Make them be the best they can be.