Panel B: Scientific Research and Grant Writing

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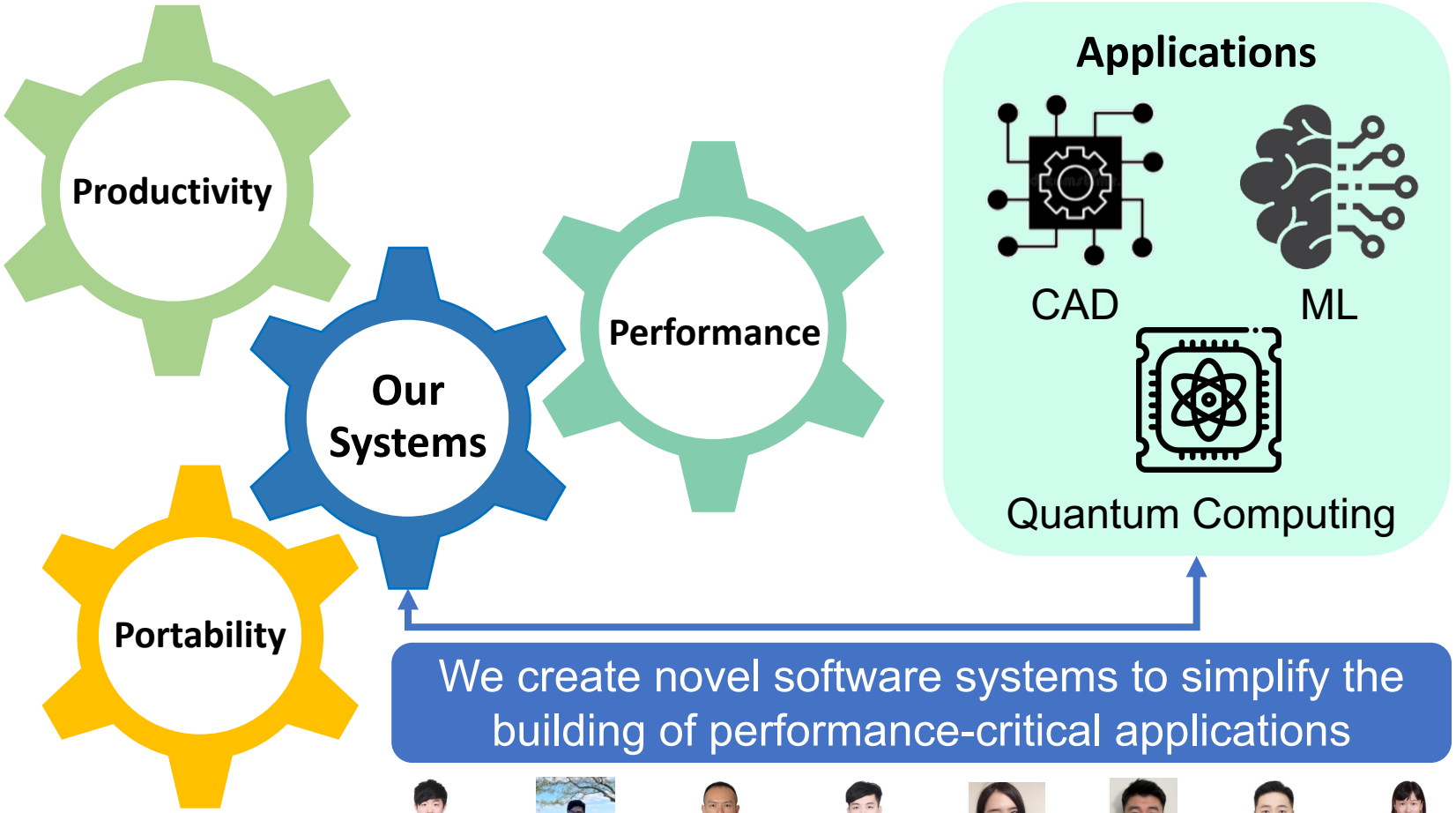
About Me and My Research



My research group: https://tsung-wei-huang.github.io/

Research Sponsors

DARPA

NSF

NUMFOCUS
OPEN CODE = BETTER SCIENCE

Google Summer of Code

NVIDIA

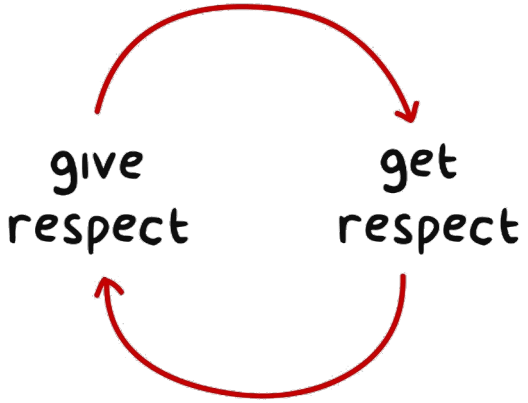
intel

Panel Questions

- How to get the best PhD students?
- Any ways to increase the research impact?
- When is the best time to prepare for the early career award?
- How to survive rejections, both papers and proposals?
- How to balance between sole and collaborative proposals?
- ~~Does life look different after tenure?~~

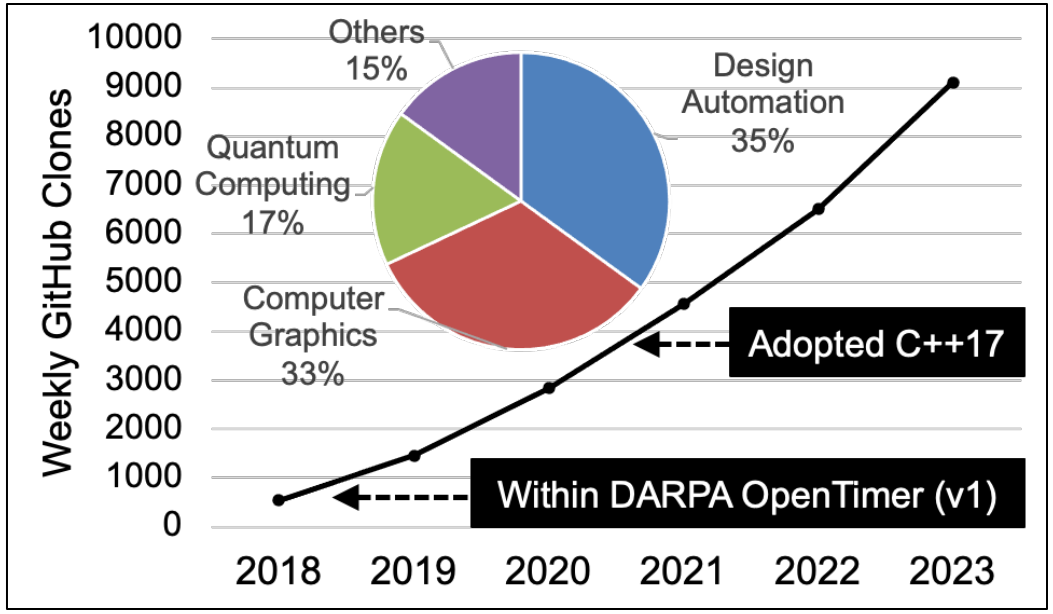
How to Get the Best PhD Student?

- **For me, the concept "Best PhD Student" does not exist …**
  - The concept "best" is subjective and varies depending on the specific needs of your research project and your group culture
- **Rather than seeking the best, it's more important to recognize:**
  - **Talent:** theoretical analysis vs engineering vs programming …
  - **Potential for growth**: willing to learn and resilient in front of challenges
  - **Fit with your research group:** share similar personality and work ethic
- **Treat your students how you would like to be treated!**
  - Your relationship is foundational to the student's success
  - **Respect your students! And their lives as well!**
  - Your PhD students will help you find other students too!



Ways to Increase Research Impacts

- **Focus on the research that you are interested in**
  - Don’t just follow the bandwagon but the things that benefit people
  - **Impact comes from people using your research results**
- **Pay attention to the value of open source**
  - More than just putting code to GitHub
  - Maintain it, cultivate it, and grow it
    - Many non-traditional research works
    - Many engineering efforts
    - Eventually your efforts will pay off!
- **Example: our Taskflow project**
  - https://taskflow.github.io/
  - Cornerstone of my NSF grants



Best Time to Prepare for NSF CAREER

- **Try to submit your NSF CAREER proposal ASAP**
  - If accepted, congratulations!!!
  - If declined (very likely for the first time), this is a great chance to reflect on your research agenda and improve your proposal for future submissions
- **Prepare your proposal EARLY so you have time to seek help**
  - **2/1:** Frame your idea and talk to people if it is suitable for NSF CAREER
  - **5/1:** Get an initial draft ready and ask people (e.g., senior faculty) for help
  - **6/1:** Receive feedback from people
    - I got tremendous help from Sachin Sapatnekar, David Pan, Sherief Reda, Chris Myers, Priyank Kalla, Martin Wong, Jingtong Hu, Cunxi Yu, etc. – **THANK YOU VERY MUCH!** (PS: I am not asking you to bother them 😅)
    - It's important to hear "harsh" comments from them instead of from the panelists
  - **7/1:** Iterate and improve your proposals (e.g., writing, ideas, budget, etc.)

How to Survive Rejections? – Be Positive!

- **Rejection is an integral component in your life**
  - Helps you grow personally and professionally!
  - Helps you build resilience to bounce back from setbacks

- **Rejection often comes with feedback**
  - Invaluable for learning and improvement over job applications, project proposals, manuscript submission, etc.
- **Rejection fuels your motivation**
  - Drive you to work harder, refine your strategies, embrace new ideas, and ultimately achieve your goal

The world isn't always kind, but it won't shortchange you either!
(as long as you keep positive about being rejected - ☺)

Balance Sole and Collaborative Proposals

- **Spend your early-stage time on building group pipeline first!**

Sole-PI proposal #1
(NSF CISE core small)

Sole-PI proposal #2
(NSF/DOE CAREER)

…

Sole-PI proposal #N
(Other NSF programs)

Co-PI collaborative proposals
(NSF CISE medium, FuSe, etc.)

Early stage (Year 1 – 4)

Late state (Year 5 –)