How to FUND your research program

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Academic Freedom
(for the most part)

You can pursue whatever research you want

BUT, you will need some funding to be successful

- to pay for students
- to travel and present your work
- funding is sometimes used in tenure evaluations

Funding Opportunities

Multiple funding sources

- multiple government agencies
  - (US) http://www.grants.gov/applicants/find_grant_opportunities.jsp
- industrial research labs
  - Microsoft Research Connections, Google Faculty Research Awards
  - SAP ARC, IBM CAS, etc. graduate fellowships
- industrial partnerships
- university awards

(US) NSF funding

- NSF accepts ~15% of proposals in core SE/PL research
- percentage is higher for CAREER applications
- best to apply for CAREER award early

Funding Opportunities

Show up when invited to meetings with funders

- don't prejudge funders' needs

- good experience in explaining your work to others

- good exposure to other colleagues in the meeting

Funding Opportunities

Align your funding efforts with your research program

- not the other way around
  - having no money may be better than having money with distracting obligations

- be open to new research directions
  - branch out some to demonstrate independence from supervisor

- BUT, don't spread yourself too thinly

- ideally, research projects should be related
  - want coherent body of important work at tenure time

Funding Opportunities

Pros and cons of industrially funded research

+ keeps you grounded in reality

+ often entails access to data, tools, developers

+ attracts good industry-bound students

+ work may have real impact on practice

+ partners can write support letters for proposals

+ results may be commercializable

+ fewer constraints on how funding is used

Funding Opportunities

Pros and cons of industrially funded research

- can take longer to produce results; may need to
  - learn the domain
  - filter / abstract / massage data

- may have non-research deliverables
  - development work
  - progress reports

- publications may be delayed or censored
  - non-disclosure agreements
  - IP agreements

Research Proposal

Tie the proposed work to an important open problem

- significance of research problem is increasingly important
- helps granters to justify how their money is spent

Tie the proposed work to previous work you have done

- convey your unique ability to conduct proposed research

Describe how students benefit from the proposed work

- what technical expertise they will develop
- what training they receive in research methodology
- how they benefit from interactions with junior and senior members of the research team

Seek Advice
(lots of it)

Advice on funding opportunities

- **university's research office:**
  - aware of funding opportunities
  - can offer advice, answer questions
  - may know how about the reviewing process, criteria
  - may have technical writers
    - trial a writer before taking him / her on

- **granter:**
  - is the proposed research a good match for the call for proposals?

- **grant holders:**
  - how difficult / timeconsuming is the application process?
  - how onerous are the grant obligations?

Seek Advice
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Advice on your proposal

- **grant holders:**
  - ask for copies of highly successful grants

- **colleagues, mentors, former grant reviewers:**
  - ask multiple people to *review* your proposal

- **chair, senior colleagues:**
  - ensure that the budget reflects the cost of research
    - i.e., own salary, students, administration, computing, overhead

- **reviewers:**
  - if a proposal is rejected, revise and resubmit

Agree to serve on a grant review panel

Reach out to Collaborators

Consider applying for grants with co-investigators

- collaborative research grants
- infrastructure grants

+ can increase your number of successful grants

+ you see firsthand how others work

+ new ideas arise from integrating ideas, work

+ collaboration can add a social component to research

Summary

Align your funding with your research program

Seek lots of advice