NSF CISE CAREER Proposal Writing Workshop

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March 20, 2017

About Me

- 2003   PhD UC Santa Barbara
           Electrical & Computer Eng.
- 2003-4 Postdoc Lawrence Livermore
           National Lab
- 2005   Founding faculty UC Merced
           First CSE faculty hired!

About Me

- Research interests: technical focus
  - Image processing, computer vision, pattern recognition

- Research interests: domain focus
  - Synergy between images and geographic location

My CAREER Award

- Volunteered Geographic Information: Crowdsourcing What-Is-Where on the Surface of the Earth Through Proximate Sensing

My CAREER story

- 2006: First submission
  - Mostly extension of my PhD research
  - Not successful
- 2010: Second submission
  - New topic
  - Not successful—reviewed by wrong panel?
- 2011: Third submission
  - Revised 2010 submission
  - Awarded!

Early preparation

- Obtained sample proposals from researchers in same domain
- Served on NSF review panels (including CAREER)
- Looked through abstracts, etc. of recently funded NSF proposals in my area
- Honed proposal writing by submitting non-CAREER proposals

Writing the proposal

- Read the solicitation and GPG in detail
- You have control over progress of project description
- You don't have control over progress of other components:
  - Budget and justification, internal forms, chair's letter, etc.
- Make sure you know your institution's internal deadlines!

Proposal structure (my approach)

- Have ~3 specific goals/aims
  - State them explicitly and early in the project description
- After (short) introduction, get straight to goals
  - Each can have its own related work, prior results, work plan, **evaluation**
- Be clear to distinguish between:
  - Other researcher's work
  - Your previous work
  - Work to be done
- Timeline (Gantt chart)

Proposal misc

- Five years is a long time to plan so have a mixture of goals
  - Near-term, low-risk aim
  - Medium-term, medium-risk aim
  - Far-off, high-risk aim: think big
- Initial published results can help convince reviewers that the problem is worthwhile and tractable
  - I was fortunate to have a recent publication on initial work in a top conference (I quoted the reviews)

Proposal misc

- Respect font sizes, margins, etc.
  - Don't make it challenging for the reviewers to read your proposal
- Visuals (figures) are useful for conveying information and preventing the project description from being just dense text
  - A project overview figure, if appropriate, can be particularly helpful

Integrating education

- CAREER program is unique in its expectation of well-integrated research and education
- Options
  - Engage K-12: are there groups on your campus which already have the contacts/framework?
  - Engage undergraduates through research projects (mention your record of doing this if appropriate)
- Try align with national priorities
- Quality, not quantity
- Measuring outcomes

Broader impacts

- Reaching out to underrepresented students
- UC Merced is an Hispanic Serving Institution

Getting help

- Talk with senior colleagues about your idea as well as proposal writing in general

- Talk with recent CAREER awardees in your department

- Have people you respect/trust read and provide feedback on your proposal (I did not get around to doing this)

- Get feedback from NSF program directors on declined proposals

Challenges

- Making sure your proposal is reviewed by the correct panel
  - Provide suggested reviewers who work in your proposal's area
  - These reviewers give the NSF program director additional data points on the focus of your proposal
  - Use the project title, summary, and keywords to help direct your proposal to the correct panel

Thank you and good luck with your proposal!