Establishing and Nurturing Research Collaborations

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Why collaborate?

- See real world application of Computer Science technology
- Have opportunity to learn about other academic disciplines
- Be able to tackle complex projects
- Some problems can only be solved in this manner

Types of Collaboration

- Within CS
  - Within an area (e.g., Compilers)
  - Between areas (e.g., O/S and AI)
- Between CS and other disciplines
  - e.g., Biology, Physics

Types of Collaboration

- Between university researchers
  - Between faculty and their students
- Between university and industrial researchers

Advantages

- May be easier to obtain funding
- Industrial collaborations
  - See real problems before abstraction
  - See practical application of your research
  - Can result in acquiring equipment or software to help in your work (sometimes through licenses)
  - Can obtain student internships

Advantages

- University collaborations
  - Understand another 'world view'
  - Can sometimes look at a scientific problem and see what CS problem 'fits it'

Disadvantages

- Long start-up time
  - Need to evolve a shared way of looking at and describing the problem
- Need for face-to-face meetings
- Where do you publish results?
  - Are the conferences/journals known in both disciplines?
- Junior faculty - need to establish a personal research identity

Disadvantages

- Industrial collaborations
  - Lawyer stuff
- University collaborations
  - Cost and return sharing

How to make it work?

- Establish a process to get work defined, assigned, and accomplished
  - Meetings cannot be replaced by email or teleconferencing
  - Post notes of meetings internally on website
  - Make sure students involved talk to one another
  - Establish shared related reading lists and discussions
  - Share conference reports/contacts with collaborators

How to make it work?

- Frame long-term questions to be answered
- Use short-term objectives to subdivide research into manageable pieces
  - Divide work into investigations that 'fit' into a coherent whole
  - Make progress one paper at a time

How to make it work?

- Be aware of personal working styles
  - Last-minute vs plan-ahead folks
  - Setup a policy for how to produce papers on the project
- On software projects, become CVS believers
- Leverage your efforts using your graduate students
- Make effective use of undergraduates when possible (e.g., NSF REU funds)