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)