



Integrating Computational Thinking into Courses for Non-majors

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My Research

- **Applied algorithms**
 - New algorithms for problems motivated by applications
 - parallel and distributed computation
 - query processing in mobile environments
- **Computer science education**
 - SECANT: focused in science majors
 - CS4EDU: focused on secondary education majors





Science Education in Computational Thinking (SECANT)

- Develop a first computing course for science majors focused on computational thinking and needs in their discipline
- Communicate and interact with
 - Faculty in sciences (various institutions)
 - Computer science education researchers
 - High school teachers
 - Students





Computer Science for Education (CS4EDU)

- Create pathways for education majors to become computationally educated secondary teachers
- Design a CS teaching endorsement
 - includes developing a CS methods course
- Communicate and interact with
 - Faculty in College of Education
 - High school teachers
 - Indiana Department of Education, CSTA



My Broader Impact Activities



- Workshops
 - For faculty from other institutions (SECANT)
 - For high school CS teachers (CS4EDU)
- Evidence of broader impact
 - Join the SECANT community
 - Use our course and project material
 - Students changing their views (pre/post surveys)
 - Dialog with the Indiana Dept. of Education
 - Pursue AP CS counting as a math or science course in high schools as well as college admission



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Connections

- Our projects are driven by wanting to change the status quo for
 - Intro computing courses
 - Computing in high schools
 - We need feedback from various stakeholders
- Activities lead to new research
 - Use of visualization in understanding computation
 - How to teach the teaching of computer science





Broader Impact Activities ...

- are an essential part of our projects
- help to get necessary feedback, support and buy-in
- help build a community and help others with similar projects



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A GOOD Activity is ...

- Running a workshop
 - Use existing infrastructures to organize the event
- Organize a session as part of an existing event
 - Possible events: workshop, outreach event, recruiting event





Join us and find out more ...

- <http://secant.cs.purdue.edu/>
- <http://cs4edu.cs.purdue.edu/>



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My Advice

- **Understand whom your work can impact and how**
- **Be realistic on what you can do**
 - Don't claim changing the curriculum
 - Don't propose running a summer workshop for K-12 students on your own
 - Possibly get senior faculty or experienced staff involved
- **Build on what exists**
 - Professional community: programs offered through CRA-W, CRA-E, NCWIT, GHC, etc





Contact Me!

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