

CPATH i18n: Internationalization of Computer Science Education - the Pacific Rim Model

www.cpathi18n.org



PIs and Management Group

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What is CPATH?

- CISE (Computer and Information Science and Engineering) Pathways to Revitalized Undergraduate Computing Education
- Focused on national transformation of undergraduate computing education in ways that are likely to be adopted at multiple institutions
- This is a new program at NSF 



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i18n Long Term Goals

- Prepare U.S. computer science graduates to work and to be leaders in a global community of computer science professionals
- Enrich cs education through new curricula, pedagogical methods and tools, international experiences.



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i18n Pacific Rim Community

- We are building a partnership among computer science departments, high tech industry, and international programs with focus on Asia.
- We will convene a series of workshops with our partners to explore how to internationalize cs education.

Partners




Our Pacific Rim Community
(Blue Marble image courtesy NASA Visible Earth <http://visibleearth.nasa.gov/>)

Workshop Schedule

- **Workshop 1:** Coming Together: Assessing the Needs, Benefits, and Challenges of i18n of Computer Science Education (May, 2008)
- **Workshop 2:** Enhancing Computer Science Education through Pacific Rim Partnerships and International Experiences (Oct, 2008)
- **Workshop 3:** Cultural Impacts on Computer Science Curricula and Pedagogy (May 2009)
- **Culmination:** Sustaining our Pacific Rim Community (To Be Determined)

i18n Project Outcomes

- Resource base about i18n of computer science education
- Recommendations to NSF, IEEE/ACM
- Inter-institutional partnerships with Pacific Rim
- Collaborative programs in curricular innovation, pedagogy, tools
- Prepare for a CPATH "Transitional" grant proposal submission



Planning Workshop in Portland with Pacific NW Partners (Nov. 9-11 at PSU)

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Panel Members

- Paul McKenney, IBM
- Salil Dave, Microsoft
- Mark Baugher, Cisco
- Sharad Garg, Intel
- Cindy Brown, PSU
- Larry Snyder, U. Washington

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i18n Challenges

- Cultural sensitivity and communication skills
- Experience with distributed intl software development
- Language barriers and misunderstandings
- Working across timezones
- Need for face-to-face and trust-building
- Resource differences, pay equity
- Immigration, security, laws
- Technical expertise in code localization
- Large cultural differences in product appeal and usage

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Solutions Brainstorm

- **Curricular enrichment:** HCI and Universal Usability, Ethics/law, Software Engineering, global network security, cross cultural communication...
- **Distributed international software projects** (partnership infrastructure and tools)
- **Tools:** cross cultural collaboration and social networking tools
- **Dual degree programs and faculty/student exchange**
- **International experiences:** internships, service
- **Special programs:** Summer school, international contest

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Dual Degree and Collaborative Teaching

- **Simon Fraser and Zhejiang University DD**
 - Ted Kirkpatrick
- **Portland State and Soochow University DD**
 - Cindy Brown
- **Washington and Beihang University**
 - Richard Anderson
- **George Mason 1+2+1 U.S. and China DD**
- **Georgia Tech and Korea University DD**

International Service Projects

- **Unlimited Potential** (Ahktar Badshah, Microsoft)
 - a global initiative to promote digital inclusion and increased access to technology skills training in underserved communities.
- **U. of Oregon Network Startup Resource Center**
 - NSF funded project aimed at the deployment and integration of appropriate networking technology in the developing world.
- **The Digital Study Hall** (Tom Anderson, UW and Randy Wang, former CS Professor at Princeton)
 - improve education for the poor children in slum and rural schools in India through delivery of live classes on DVDs

Language intensive projects

- **Oregon China Flagship Program**
 - K-16 students become linguistically and culturally competent in Mandarin Chinese. Students are able to pursue degrees in any of the 134 academic programs offered at the UO while taking college-level courses in Chinese.
- **MIT China**
 - prepares young scientists, technologists, and managers to work in a Chinese speaking setting and participate in the rapidly expanding world of East Asian business and technology.

Integrate or model international research partnerships

- **Global Living Laboratory for Cyber-Infrastructure Application Enablement**
 - Florida International U. and Florida Atlantic U.
 - Computing infrastructure to solve societal problems in disaster mitigation, health care, life sciences
 - Partnership with IBM International Research Labs, Barcelona Supercomputing Center
 - Funded by NSF PIRE