

Swamy Ananthanarayan

University of Colorado Boulder
430 UCB
Boulder, CO 80309-0430

Phone: +1 720 310 5811
E-mail: ananthas@colorado.edu
<http://makingthingsblink.com>

Research Interests

I just finished my Ph.D. in Computer Science (December 2015) from the University of Colorado Boulder. My research focuses on designing, building, and evaluating interactive technologies in the health and wellness domain. Since work in this area is interdisciplinary by nature, my interests encompass a variety of practices, including software engineering, embedded systems, cognitive science and various prototyping activities (e.g., 3D printing, laser cutting, PCB design). Prior to my graduate studies, I worked in industry for 6 years as a software engineer.

Education

Ph.D. Computer Science and Cognitive Science

University of Colorado Boulder, Dec 2015

Advisors: Mike Eisenberg and Katie Siek

Thesis: *Health Craft: A Computational Toolkit for Motivating Health Awareness in Children*

M.S. Computer Science

University of Colorado Boulder, May 2010

B.S. Computer Engineering and Computer Science

Rensselaer Polytechnic Institute, May 2001

Experience

Craft Technology Lab, Boulder, CO (2013-Present)

Graduate Research Assistant

- Researched technological interventions for motivating healthy behaviors in children
- Developed an embedded health toolkit consisting of wearable sensors (e.g., accelerometer, UV sensor, etc.) and ambient modules that children can use to create their own personally meaningful health technologies
- Conducted multiple user evaluations of the toolkit with middle school children over the span of a year

Marvell Semiconductor, Santa Clara, CA (Summer 2013)

Research Intern

- Implemented the I²C communication layer for a JavaScript powered embedded construction kit for IoT devices
- Designed and implemented an ambient electronic painting that showcased the kit (featured in SxSW)

Wellness Innovation and Interaction Lab, Boulder, CO (2010-2013)*Graduate Research Assistant*

- Developed a wearable electronic sleeve for helping patients visualize knee rehabilitation exercises and evaluated the prototype with 6 patients
- Examined the role of health technologies in low socioeconomic status families through two user studies: one that explored the privacy implications of sharing health data and another that evaluated four mobile phone interfaces for motivating healthy snacking habits

Laboratory for Atmospheric and Space Physics, Boulder, CO (2009-2010)*Graduate Research Assistant*

- Worked as a developer on command and control software (C++, Qt4) that provided functionality to monitor and control spacecraft and their scientific instruments

MITRE Corporation, Bedford, MA (2006-2007)*Software Systems Engineer*

- Served as lead developer for MITRE's web-based resource planning tool used to manage work programs for a fiscal year (Java, Struts, Ant)
- Worked on a prototype health station that utilized the Eclipse Open Healthcare Framework for interfacing with medical devices (Java, Equinox OSGi)
- Developed drivers for stereo and range imaging cameras mounted on an autonomous vehicle that mapped its environment (C++)

Fairchild Semiconductor, South Portland, ME (2001–2006)*Software Engineer*

- Designed and implemented an application (C++, Borland Builder) that dynamically designed a power supply given certain electrical characteristics
- Developed an operating system (C++, Borland Builder) that controlled a wide array of test equipment (Scope, Datagen, Multimeter, etc.) via a GPIB card
- Worked on various electronic design tools (Java, Swing) that automatically generated Hspice syntax and models from circuit designs

Fellowships and Awards

University of Colorado Boulder Graduate Student Research Development Award, 2012

Workshop on Interactive Systems in Healthcare Mentoring Program Award, 2011

University of Colorado Boulder Engineering Excellence Fund, 2011

University of Colorado Boulder Computer Science Ph.D. Fellowship Grant, 2010

University of Colorado Boulder Engineering Excellence Fund, 2009

Publications

Conferences

- [c9] S. Ananthanarayan, K. Siek, and M. Eisenberg, “A craft approach to health awareness in children,” in *Proceedings of the 2016 Conference on Designing Interactive Systems*, DIS ’16, (New York, NY, USA), p. To Appear, ACM, 2016.
- [c8] J. Kim, S. Ananthanarayan, and T. Yeh, “Seen music: Ambient music data visualization for children with hearing impairments,” in *Proceedings of the 14th International Conference on Interaction Design and Children*, IDC ’15, (New York, NY, USA), pp. 426–429, ACM, 2015.
- [c7] S. Ananthanarayan, N. Lapinski, K. Siek, and M. Eisenberg, “Towards the crafting of personal health technologies,” in *Proceedings of the 2014 Conference on Designing Interactive Systems*, DIS ’14, (New York, NY, USA), pp. 587–596, ACM, 2014.
- [c6] S. Ananthanarayan, M. Sheh, A. Chien, H. Profita, and K. Siek, “Designing wearable interfaces for knee rehabilitation exercises,” in *8th International Conference on Pervasive Computing Technologies for Healthcare*, PervasiveHealth ’14, pp. 101–108, ICST, 2014.
- [c5] S. Ananthanarayan, M. Sheh, A. Chien, H. Profita, and K. Siek, “PT Viz: Towards a wearable device for visualizing knee rehabilitation exercises,” in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI ’13, (New York, NY, USA), pp. 1247–1250, ACM, 2013.
- [c4] D. U. Khan, S. Ananthanarayan, A. T. Le, C. L. Schaeffbauer, and K. A. Siek, “Designing mobile snack application for low socioeconomic status families,” in *6th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth 2012)*, pp. 57–64, IEEE, May 2012.
- [c3] D. U. Khan, K. A. Siek, and S. Ananthanarayan, “Towards designing health monitoring interfaces for low socioeconomic status families,” in *6th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth 2012)*, pp. 167–170, IEEE, May 2012.
- [c2] S. Ananthanarayan and K. A. Siek, “Health sense: a gedanken experiment on persuasive wearable technology for health awareness,” in *Proceedings of the 1st ACM International Health Informatics Symposium*, IHI ’10, (New York, NY, USA), pp. 400–404, ACM, 2010.
- [c1] B. Ray, S. Ananthanarayan, and S. Mishra, “A reliable transmission protocol for sensors in poorly connected areas over mobile networks,” in *Proceedings of the 9th IASTED International Conference on Parallel and Distributed Computing and Networks*, (Innsbruck, Austria), 2010.

Journals

- [j1] D. U. Khan, S. Ananthanarayan, and K. A. Siek, “Exploring everyday health routines of a low socioeconomic population through multimedia elicitations,” *Journal of Participatory Medicine*, vol. 3, no. e39, 2011.

Workshops

- [w2] S. Ananthanarayan and K. A. Siek, “Persuasive wearable technology design for health and wellness,” in *In Wellness Interventions and HCI Workshop at Pervasive Healthcare 2012*, pp. 236–240, IEEE, 2012.
- [w1] S. Ananthanarayan, A. Y. Chien, M. Sheh, and K. A. Siek, “Visualizing physical therapy with electroluminescence wire,” in *In Workshop on Interactive Systems in Healthcare (WISH)*, (Washington D.C., USA), pp. 179–182, October 2011.

Technical Reports

- [tr1] S. Ananthanarayan, “Feasibility of nonlinear heart rate variability analysis in clinical settings,” in *Projects in Chaotic Dynamics*, (University of Colorado Department of Computer Science Technical Report CU-CS 1060-10), pp. 1–9, July 2010.

Skills

Languages:	C, C++, Java, Python, sh
Databases:	Oracle, SQLite
Systems & Platforms:	Linux, Mac OS X, Unix (Solaris), Windows
Software Tools:	GNU tool chain (gcc, g++, gdb, make), Valgrind, Eclipse, Emacs
Version Control:	CVS, SVN, Git
Fabrication:	3D printing, PCB design, SMD reflow soldering, laser cutting

Teaching

GEEN 1400: Games for Health, Fall 2011

Teaching Assistant

- Developed tutorials to introduce first year undergraduates to basic electronics and embedded programming
- Lectured periodically about current research in health technology

GEEN 1400: Computing in Social Networking Sites, Spring 2009

Teaching Assistant

- Mentored entry-level undergraduates in their first design-build-test engineering course
- Graded all assignments and helped students solve various technical problems
- Developed a variety of tutorials for electronics and basic programming

Mentoring

Thomas Erickson	B.S. Computer Science 2015
Kevin Winseck	Boulder High School 2015
Alice Chien	B.S. Computer Science 2015, co-authored [c5, c6, w1]
Nathan Lapinski	B.S. Computer Science 2014, co-authored [c7]
Miranda Sheh	B.S. Business Administration 2013, co-authored [c5, c6, w1]

Service

Academic Reviewer

ACM Human Factors in Computing Systems (CHI), 2011-2015

ACM/IEEE Pervasive Computing Technologies for Healthcare (PervasiveHealth), 2010-2015

ACM Ubiquitous Computing (UbiComp), 2014

ACM Tangible, Embedded and Embodied Interaction (TEI), 2011

American Medical Informatics Annual Symposium (AMIA), 2011

ACM International Health Informatics (IHI), 2010

Social

Volunteer at Gold Crown Computer Clubhouse, an arts and technology enrichment program for low-income middle school children, 150+ hours, 2014-present

Tutored science and math to middle and high school students from low-income families at the Bridge Project, 60+ hours, 2009-2012