

Swamy Ananthanarayan

OFFIS – Institute for Information Technology
Escherweg 2
26121 Oldenburg, Germany

E-mail: swamya@gmail.com
Phone: +49 (0) 441 97 22 405
<http://makingthingsblink.com>

Research Interests

Human-computer interaction (HCI), tangible interactive systems, computational toolkits, children's technology, health informatics

Education

Ph.D. Computer Science and Cognitive Science

University of Colorado Boulder, USA, 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, USA, May 2010

B.S. Computer Engineering and Computer Science

Rensselaer Polytechnic Institute, USA, May 2001

Experience

University of Oldenburg / OFFIS, Oldenburg, Germany (2016-Present)

Postdoctoral Researcher

- Involved in co-supervising doctoral students, teaching bachelor and master's HCI courses, and writing research proposals
- Conducting independent HCI research (supervised by Prof. Susanne Boll) on programmable kits for children that facilitate debugging

Craft Technology Lab, Boulder, CO, USA (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, USA (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, USA (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, USA (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, USA (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, USA (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

- [c15] M. Koelle, S. Ananthanarayan, S. Czupalla, W. Heuten, and S. Boll, “Your smart glasses’ camera bothers me!: Exploring opt-in and opt-out gestures for privacy mediation,” in *Proceedings of the 10th Nordic Conference on Human-Computer Interaction*, NordiCHI ’18, (New York, NY, USA), pp. 473–481, ACM, 2018.
- [c14] V. Cobus, H. Meyer, S. Ananthanarayan, S. Boll, and W. Heuten, “Towards reducing alarm fatigue: Peripheral light pattern design for critical care alarms,” in *Proceedings of the 10th Nordic Conference on Human-Computer Interaction*, NordiCHI ’18, (New York, NY, USA), pp. 654–663, ACM, 2018.
- [c13] A. Matviienko, S. Ananthanarayan, S. S. Borojeni, Y. Feld, W. Heuten, and S. Boll, “Augmenting bicycles and helmets with multimodal warnings for children,” in *Proceedings of the 20th International Conference on Human-Computer Interaction with Mobile Devices and Services*, MobileHCI ’18, (New York, NY, USA), pp. 15:1–15:13, ACM, 2018.
- [c12] T. Wallbaum, A. Matviienko, S. Ananthanarayan, T. Olsson, W. Heuten, and S. C. Boll, “Supporting Communication Between Grandparents and Grandchildren Through Tangible Storytelling Systems,” in *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, CHI ’18, (New York, NY, USA), pp. 550:1–550:12, ACM, 2018.
- [c11] T. Wallbaum, S. Ananthanarayan, S. S. Borojeni, W. Heuten, and S. Boll, “Towards a Tangible Storytelling Kit for Exploring Emotions with Children,” in *Proceedings of the on Thematic Workshops of ACM Multimedia 2017*, Thematic Workshops ’17, (New York, NY, USA), pp. 10–16, ACM, 2017.
- [c10] A. Matviienko, S. Ananthanarayan, W. Heuten, and S. Boll, “AwareKit: Exploring a Tangible Interaction Paradigm for Digital Calendars,” in *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, CHI EA ’17, (New York, NY, USA), pp. 1877–1884, ACM, 2017.
- [c9] S. Ananthanarayan, K. Siek, and M. Eisenberg, “A Craft Approach to Health Awareness in Children,” in *Proceedings of the 2016 ACM Conference on Designing Interactive Systems*, DIS ’16, (New York, NY, USA), pp. 724–735, 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.

Teaching

Human-Computer Interaction, Summer 2018

Lecturer

- Co-instructor for a graduate level course that introduced students to the field of HCI
- Lectured periodically on a variety of topics such as prototyping, conducting user studies, and qualitative analysis

Maker's Lab, Summer 2017, 2018

Instructor

- Primary instructor for a hands-on course where graduate students learned to practically prototype, fabricate (e.g., 3D printing, laser cutting), and program electronics to create new user experiences
- Developed project topics, mentored students, graded progress reports, and helped students solve various technical problems

Experiments and Studies Seminar, Winter 2017

Instructor

- Developed a 3-month seminar that taught graduate students how to practically conduct and report experiments
- Conducted lectures and guided students in designing, conducting, analyzing, and reporting a mini-experimental study

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

Andrii Matvienko	PhD Computer Science (expected 2019), co-authored [c10, c13]
Torben Wallbaum	PhD Computer Science (expected 2018), co-authored [c11, c12]
Marion Koelle	PhD Computer Science (expected 2019), co-authored [c15]
Vanessa Cobus	PhD Computer Science (expected 2019), co-authored [c14]
Thomas Erickson	BS Computer Science 2015
Kevin Winseck	Boulder High School 2015
Alice Chien	BS Computer Science 2015, co-authored [c5, c6, w1]
Nathan Lapinski	BS Computer Science 2014, co-authored [c7]
Miranda Sheh	BS Business Administration 2013, co-authored [c5, c6, w1]

Service

Academic

- Associate Chair for CHI 2019 (Health), DIS 2018 (Experience)
- Program Chair for Long Term Self Tracking Workshop at CHI 2018
- Conference and Journal Reviewer for CHI (2011-2018), DIS (2016-2018), Pervasive-Health (2010-2015, 2018), MobileHCI (2018), UbiComp (2014, 2016), TEI (2011, 2018), AMIA (2011), IHI (2010), IJCCI (2017)

Social

- Volunteer at Gold Crown Computer Clubhouse, an arts and technology enrichment program for low-income middle school children, 150+ hours, 2014-2015
- Tutored science and math to middle and high school students from low-income families at the Bridge Project, 60+ hours, 2009-2012