

Stephanie Valencia²

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EDUCATION

EIA University and CES University, Medellin, Colombia Jan. 2010 - Dec. 2014
BS in Biomedical Engineering. Dean's public mention for service excellence.

RESEARCH AND DESIGN EXPERIENCE

Yale Child Study Center, Yale University, New Haven, CT July 2015 - present

Postgraduate Associate-Translational Technologies in Development Research Fellow

Advisors: Frederick Shic, PhD; Katarzyna Chawarska, PhD

- Developing tangible technologies for autism research to enable naturalistic collection of sensory preferences data through spontaneous play. Developed "the Sensory Toy Box" for examining sensory preferences and physical augmentation of communication in toddlers.
- Support the technical development of Momba a social networking application to help mothers in New Haven quit smoking. PI: Megan Smith, PhD. NCI R01CA195654
- Designed a portable tangible interface to examine preferences in auditory stimuli in children with and without ASD in collaboration with the Tecnológico de Monterrey.
- Created web scraping robots and parsers to collect data on current apps for autism available in the app store and google play store. Classified the apps under one central group of categories chosen from the literature. Currently working on centralizing this information to allow easy identification and rating of these apps by parents, guardians and stakeholders.
- Evaluating GPS data from the Momba App study to explore different markers of depression based on mobility measures.
- Peer Reviewer - Journal of Autism and Spectrum Disorders (JADD).

Assistive Labs April 2015 – present

Co-founder, Lead Design Engineer

- Currently co-designing an Augmentative and Alternative Communication aid (AAC) with community partners in Rwanda for children with nonverbal autism and intellectual disabilities in partnership with Handicap International.
- Designed a needs assessment tool for our community partners in Rwanda to collect design requirements for the AAC device based on the following main categories: Environmental Context, Current technology used, User characteristics, Assistive technology resources, Activity analysis, Product Analysis.
- Selected among 60 applicants for Yale's Venture Creation program and received a grant from the Yale Entrepreneurial Institute for the AAC prototype development.
- Directed a group of engineers through a Human-Centered design weeklong makeathon to assess the abilities of Danny, our user and friend, who has cerebral palsy and a cortical vision impairment. I designed experiments to quantify his sensory, motor, and cognitive abilities in order to identify challenges and opportunities. Led the brainstorming sessions during the first three days of the hackathon and aided in the instrumentation of our outcome: Wheelsense, an augmented wheelchair that provides frontal step-off, backward obstacle and lateral ramp-edge detection.
- Attended and participated by invitation, the Convention on Rights for People with Disabilities talk at the United Nations in NYC session: "Promoting Technological Entrepreneurship in the Field of Disabilities," organized by the Permanent Missions of Israel and Argentina to the United Nations and Beit Issie Shapiro

Open Style Lab, Massachusetts Institute of Technology, Cambridge, MA Feb. 2015 - March 2015

Visiting Engineer, Advisor: Grace Teo, PhD

- Developed a customizable educational toy box to support multi-sensory learning for kids with sensory disabilities.
- Supported the design and construction of the Mitsy Kit a quilting kit for the visually impaired. Designed a kit that contained all quilting materials and could be used independently by a blind user.

MIT, HST.936 Global Health Informatics to Improve Quality of Care Feb. 2015 - May 2015
Auditing Student, Advisor: William Bosl, PhD; Kenneth Paik, MD, PhD

- Designed a mobile app to screen for and collect data on developmental delays in children in Bangladesh with the purpose of improving data reliability for effective resource allocation. Used the SANA mobile platform, an open source telemedicine platform that enables a connection with an Open Medical Record System.

Fundación Multis - EIA University, Medellin, Colombia July 2014 - Nov.2014
Senior Design Project, Advisor: Tatiana Mejia, BME, MSc

- Designed, built and evaluated a tool that provides sensory stimulation and fosters the involvement of children with visual impairments in the play environment, promoting the development of their social skills.
- Implemented the principles of universal design and the human-centered design methodology to obtain a product that can be used both by children without disabilities and children with visual impairments.

Instrumentation and Technical Services, University of Vermont, Burlington, Vermont Jan 2014 - July 2014
Clinical Engineering Intern, Advisor: Tobey Clark, MSc

- Designed an analytical and modelling tool to optimize the preventative maintenance schedule for the 50,000+ medical devices that the organization maintains.
- Proposed new potential preventative maintenance frequencies saving the organization 95 work days per year.
- Worked as a Biomedical Equipment technician at Fletcher Allen Health Care.
- Successfully completed the Clinical Engineering and HealthCare Management course by Prof. Tobey Clark

Health Sciences Research Facilities, University of Vermont, Burlington, Vermont March 2014 - July 2014
Student Research Assistant, Advisor: Michael Radermacher, PhD

- Performed three-dimensional reconstruction of single particles from electron micrographs of mitochondrial complex I.
- Studied image processing techniques and complex I structural and functional characteristics.

EIA University- CES University, Medellin, Colombia Jan. 2010 – Nov. 2013
Integrated Projects

- Developed health-related Apps for Android mobile devices using Processing. These apps are: S-Ergo, measures angles in decubitus position. ColoRec, for color recognition for the visually impaired and Step Tracker, a fitness app for runners.
- Designed and built an accessible rolling ball sculpture for children with cerebral palsy.
- Instrumented a Geiger Muller radiation detector to obtain visual real time data using Arduino and Labview.
- Designed and built a pediatric PTB transtibial prosthesis with a mechanical shock absorbing system and a pressure measuring system for the socket.
- Researched the Guillain-Barré Syndrome and obtained a model of the disease's progression using electrical circuits.
- Developed an interactive educational module using Netbeans for the Biochemistry course for engineers at CES university.

GIBEC Research Group, EIA/CES University, Medellin, Colombia Feb.2010 - Nov. 2013
Student Researcher, Advisor: Claudia Echeverri, PhD

- Researched the construction and characterization of Poly Vinyl Alcohol (PVA) hydrogels for the development of blood vessel stents and Sodium alginate/PVA hydrogel beads for controlled drug release.
- Developed detailed and clear protocols to guide the construction process of PVA hydrogels.
- Characterized the hydrogels obtained using FTIR spectroscopy.

Molecular Biology Lab, Biological Research Corporation CIB, Medellin, Colombia May 2009 – June 2009
Student Intern, Advisor: Juan Guillermo McEwen, MD, PhD

- Performed recombinant technology protocols with E. Choli bacteria.
- Gained knowledge on DNA cloning with plasmids.

HONORS & AWARDS

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- IEEE- UEMCON Conference, New York, NY Oct. 2016
Best Paper Award in Artificial Intelligence and Control System track
- Paper: Mobile Ascertainment of Smoking Status: A Machine Learning Approach.
- Yale Venture Creation Program, New Haven, CT Nov. 2016
Selected Venture, Grant recipient
- Received a grant from the Yale Entrepreneurial Institute's Venture Creation Program to create AAC device for inclusive education program in Rwanda. The grant includes a \$1,000 cash investment and enrollment in YEI's five-week series of lean-startup workshops.
- 2016 Unite for Sight Global Health Innovation Conference, New Haven, CT April 2016
Social Impact Labs Semifinalist
- For the project: Assistive Labs, Collaborative Development of Assistive Technology for Low-Income Settings.
- National Ministry of Education, Medellin, Colombia Sept. 2015
Outstanding "Saber Pro" Award 2014
- Awarded to students who achieve excellent performance in the National Engineering Exam.
- Yale Child Study Center, Yale University, Technology and Innovation Lab, New Haven, CT July 2015
Translational Technologies in Development Research Fellowship
- Two-year fellowship award granted to participate in the software and hardware engineering of cutting-edge technologies that advance the science of human social-cognitive development and support research in autism and other developmental disorders.
- Rehabilitation Engineering and Assistive Technology Society of North America, Seattle, Washington June 2013
"Technology Most Likely to Close the Gap in Developing Countries"
- Award for the design of CreARTE: a multiplayer board game designed as an assistive technology that seeks to promote social inclusion in art and play of both kids and adults with visual impairments. The design and prototype was presented at the 2013 RESNA conference.

PUBLICATIONS, POSTERS AND SCIENTIFIC ABSTRACTS

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- **S. Valencia**, M. Smith, et al. Mobile Ascertainment of Smoking Status: A Machine Learning Approach. IEEE 7th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference. DOI: 10.1109/UEMCON.2016.7777917
 - **S. Valencia**, M. Perlmutter, et al. Remote validation of smoking status: pilot results. The International Society for Research on Internet Interventions (ISRII) 2016, Seattle, WA, Poster presentation
 - **S. Valencia**, P. Perez-Fuster et al. The Sensory Toy Box: An Interactive Game-Based Technology as an Assessment Tool. International Meeting for Autism Research (IMFAR) 2016, Baltimore, MD, Technology Demonstration
 - L. Hart, **S. Valencia**, M. Mademtzi, F. Shic. Apps for Autism: Identifying Trends in the App Market. International Meeting for Autism Research (IMFAR) 2016, Baltimore, MD, Poster presentation
 - B. Li, L. Boccanfuso, **S. Valencia**, B. Scassellati, F. Shic. Background Music and Sound Effects in Human-Robot Interaction. Northeast Robotics Colloquium 2015. Worcester Polytechnic Institute, Worcester, MA, Poster Presentation

TALKS & WORKSHOPS

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- A Symposium on Hybrid Scholarship at Yale University, Invited Speaker** April 2016
Symposium organized by the Digital Humanities Lab and Yale STEAM, New Haven, CT
- Talk: "Designing for All Abilities Through Art and Engineering"
- Social Impact Labs Speaker** April 2016
Global Health Innovation Conference, New Haven, CT, USA
- Talk: "Assistive Labs: Collaborative Development of Assistive Technology for Low-income Settings"

Solving Tech Problems Using the Makeathon Concept

November 2016

Abilities Expo, San Jose CA,

- User centered makeathons in which the user co-designs with the developers, can enable the creation of meaningful solutions. We drew lessons learned from a weeklong makeathon I helped organize with a team of fellow hacker friends to share how our makeathon can be a reusable model and powerful way to significantly impact lives and the innovation process in the field of assistive technology.

Can the DIY Movement Increase Access to Assistive Technologies?

July 2016

RESNA/NCART Conference, Washington D.C., USA

- Introduced the Maker's Movement and how advances in rapid prototyping and open source technologies contribute to democratizing access to assistive devices and enhance resourcefulness and innovation among caregivers and stakeholders. Presented 5 real user profiles with special needs in the developing world to the workshop attendees, inviting them to join in a mini Hackathon by brainstorming ideas around specific solutions and outlining a plan to implement such ideas. More than 40 people attended our workshop.

TEACHING EXPERIENCE

Lord College, Medellin, Colombia

April 2015 - June 2015

Temporary English Teacher

- Developed a curriculum for grade 6 and 11th English for their third bimester.
- Taught classes part-time.

Open Doors: The Learning Center, Medellin, Colombia

Sep. 2009 - Sep. 2011

Academic Tutor

- Tutoring for children grades 2 to 12, for all school subjects with special emphasis on biology, math, social studies and physics.
- Received training on pedagogy teaching strategies once a month.

Independent private tutor, Medellin, Colombia

Sep. 2009 - Nov. 2014

- Taught Biology, Math, English, Social Studies and Spanish to high-school students.

CEPROBI School, "Bilingual Production Center", Medellin, Colombia

July 2009 - Nov. 2009

Full time English and Spanish Teacher

- Planned, taught and graded materials for English and Spanish classes for grades 6 and 12.

OTHER CONFERENCES AND VOLUNTEER WORK

RESNA/NCART conference

July 2016

Washington, D.C., USA

Developers Forum presenter, presenting the Sensory Toybox project

Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Conference

June 2013

Seattle, WA, USA

Student Design Competition Finalist, presented my project CreARTE

Panamerican Health Care Exchange Conference PAHCE-2013

April 29 -May 4, 2013

Medellin, Colombia

Student Volunteer

Fundación Heroe Camina (Hero Walk Foundation)

Feb. 2008 - May 2008

Medellin, Colombia

Student Volunteer –providing English and computer lessons for soldiers wounded at war by landmines.

SKILLS

Software: C#, Python, MATLAB, LabView, MPLAB, Arduino, Visual studio, Autodesk Simulation Multiphysics, Processing, Android Studio, Git, Java, R, Unity, JSON

Hardware: Solid Edge, Solid Works, Ares, Proteus. **Languages:** Spanish (native), French (intermediate)