

Layne Jackson Hubbard

Curriculum Vitae

University of Colorado Boulder
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Boulder, Colorado
U.S.A.

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<https://laynes.world>
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Research Interest

I am a Ph.D. student in computer science, cognitive science, and neuroscience at the University of Colorado Boulder in the Department of Computer Science and the Institute of Cognitive Science.

I focus my research at the **intersection of child-robot interaction, creativity & metacognitive reflective, and early childhood development**. I have developed a novel conversational agent to enrich early childhood play experiences, leveraging techniques from human-computer interaction, voice interaction, and social robotics. The goal of my research is to *support young children in reflecting on their creative play experiences through imaginative storytelling*.

I am a former foster kid and I'm autistic. Through my work, I am exploring ways that creativity & reflection might strengthen *trauma resilience and cognitive-affective systems* in the developing brain.

keywords:

child-robot interaction, creativity, metacognitive reflection, early childhood, trauma resilience

Education

08/2015 – Triple Ph.D. in Computer Science, Cognitive Science, and Neuroscience

08/2021 University of Colorado Boulder, Department of Computer Science & the Institute of Cognitive Science

1. **Computer Science**, *Child-Robot Interaction*

Advisor: Tom Yeh, Co-Director of the Center for the Brain, AI, and Children

2. **Cognitive Science**, *Metacognitive Reflection*

Advisor: Clayton Lewis, Co-Director at the Coleman Institute for Cognitive Disabilities

3. **Neuroscience**, *Trauma Resilience*

Advisor: Marie Banich, Director of the Intermountain Neuroimaging Center

01/2012 – Bachelor of Arts in Computer Science, Class Rank #1

12/2015 University of Colorado Boulder, Department of Computer Science

08/2009 – Early Childhood Educator Certification

06/2011 Front Range Community College

Experience

- 02/2016 – **MindScribe.org**
Founder & Director
Boulder, Colorado
- 08/2015 – **Department of Computer Science**
Graduate Researcher at the University of Colorado Boulder
with Drs. Tom Yeh, Clayton Lewis, Mike Eisenberg, and Mark Gross
- 08/2014 – **Graphic, Inc. (acquired by Amazon for Alexa)**
07/2015 Data Engineer
Santa Barbara, California
- 06/2014 – **Graphic, Inc.**
07/2014 Product Management Intern
Santa Barbara, California
- 10/2013 – **Sikuli Lab**
05/2014 Research Assistant at the University of Colorado Boulder
with Dr. Tom Yeh
- 08/2012 – **Center for Health and Addiction: Neuroscience, Genes, & the Environment**
08/2013 Research Assistant at the University of Colorado Boulder
with Dr. Kent Hutchison
- 01/2012 – **Cognitive Development Center**
12/2013 Research Assistant at the University of Colorado Boulder
with Dr. Yuko Munakata
- 01/2012 – **Jones Lab for Human Learning**
05/2012 Research Assistant at the University of Colorado Boulder
with Dr. Matt Jones
- 08/2007 – **Children's House Preschool**
05/2011 Preschool Teacher
Boulder, Colorado

Publications

Layne Jackson Hubbard, Boskin Erkocevic, Dylan Cassady, Chen Hao Cheng, Andrea Chamorro, Tom Yeh. **MindScribe: Toward Intelligently Augmented Interactions in Highly Variable Early Childhood Environments.** *In Proceedings of the 23rd International Conference on Intelligent User Interfaces Companion (pp. 1-2).*

Layne Jackson Hubbard, Chen Hao Cheng, Boskin Erkocevic, Dylan Cassady, Andrea Chamorro. **MindScribe: Reflective Inquiry through Scaffolded Storytelling for Low-Income and Multilingual Early Childhood Communities.** *In Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction (pp. 345-346).*

Fellowships

- 2017–2020 **Graduate Research Fellowship, National Science Foundation.** *Building a System to Guide Reflective Interaction for Early Childhood Empowerment.* (3 years tuition & stipend)
- 2015–2017 **Chancellor’s Fellowship, University of Colorado Boulder.** (2 years tuition & stipend)

Awards

- 2019 **LEGO® Idea Conference Selected Cohort**
- 2018 **OpenIDEO Early Childhood Innovation Prize for MindScribe (\$80,000)**
- 2018 **BizWest ‘Innovation Quotient’ IQ Award in Education for MindScribe**
- 2018 **Catalyze CU Venture Accelerator Selected Cohort for MindScribe**
- 2018 **DEF CON Hacking Conference, Women in Security and Privacy Selected Cohort**
- 2018 **Outstanding PhD Poster in Computer Science, University of Colorado Boulder 1st Prize**
- 2018 **Student Design Competition, ACM Conference on Human Robot Interaction 2nd Prize**
- 2017 **Alexa Skills Hackathon, CapitalOne DevExchange at GlueCon 2nd Prize**
- 2014 **Mobile App Track, New Venture Challenge Best Minimum Viable Product**
- 2014 **University of Colorado Boulder Graduation with Distinction**
- 2014 **Phi Beta Kappa Honors Society**

Selected Scholarships

- 2013–2014 **Guardian Scholar Program for Former Foster Youth**
- 2013 **Dean’s Merit Scholars Award**
- 2013 **Bennett Family Foster Youth Scholarship**
- 2013 **Jacob Van Ek Scholars Award**
- 2013 **Individual Research Grant, Undergraduate Research Opportunities Program**
- 2013 **Multicultural & Low-Income Scholarship, Community Action Development Award**
- 2013 **University Women’s Club Scholarship**
- 2013 **Shirley Maxine Stroh Scholarship**

In the News

- 10/2018 **Press.** *BizWest names winners for IQ Awards honoring innovation*
- 10/2018 **Press.** *BizWest is honored to name over 100 finalists for this year's Boulder Valley IQ Awards*
- 09/2018 **Interview.** *My faculty mentors understood my nontraditional experiences and were committed to supporting my vision*
- 08/2018 **Press.** *Seven Inspiring Startups from the CU Ecosystem*
- 06/2018 **Press.** *Computer science startup earns early childhood innovation prize*
- 05/2018 **Press.** *A million dollars, 570 hopefuls, and 15 winners: How a new competition aims to boost babies and toddlers*
- 05/2018 **Press Release.** *MindScribe wins an OpenIDEO Early Childhood Innovation Prize*
- 05/2018 **Press.** *Boulder Startup Week: Bottom line not always measured in dollars*
- 11/2017 **Interview.** *The Neural Network: Interview with Layne Hubbard*
- 09/2017 **Interview.** *NSF winner designs voice interactions to empower early childhood development*
- 10/2016 **Podcast.** *Still Myself: A Neuroscience Story*
- 05/2014 **Interview.** *Graduating student to use computer science to help solve community issues*
- 03/2014 **Authored.** *How to be an activist in the classroom*
- 10/2014 **Authored.** *Get to know the staff: Layne's world*

Invited Talks & Demos

- 02/2020 **Keynote speaker for the Early Childhood Innovation & AI Ethics Hackathon**
T9 Hacks, University of Colorado Boulder (sponsored by the National Head Start Association)
- 01/2020 **Keynote speaker for the 7th Annual Celebration of Scholarships Luncheon**
University of Colorado Boulder (hosted by the Chancellor) — [Watch video](#)
- 11/2019 **Keynote speaker for the Guardian Scholars 10-Year Anniversary Celebration**
University of Colorado Boulder (hosted by the Chancellor) — [Watch video](#)
- 07/2019 **Panelist on AI Ethics in Early Childhood**
Headstarter Conference (hosted by the National Head Start Association)
- 05/2019 **Panelist on Entrepreneurship & Innovation in Early Childhood**
Boulder Startup Week

- 11/2018 **Invited Pitch on MindScribe, NSF Center on Pervasive Personalized Intelligence**
University of Colorado Boulder (hosted by Evan Chang and Danny Dig)
- 11/2018 **Invited Pitch on MindScribe, Inaugural San Francisco Alumni Event**
Plug and Play Tech Center, Sunnyvale, CA (hosted by CU Boulder Engineering)
- 05/2018 **Panelist on Emerging Technologies for Social & Environmental Impact**
Boulder Startup Week
- 05/2017 **Invited Demo on MindScribe, ACM CHI Conference Host Party**
Department of Information Science, University of Colorado Boulder (hosted by Ricarose Roque)
- 09/2017 **Talk on Interactive Technologies for Children**
ATLAS Institute Research Seminar (hosted by Laura Devendorf)
- 07/2017 **Stories about Science Podcast (Listen: Still Myself, A Neuroscience Story)**
E-Town Boulder (hosted by the Story Collider)

Teaching

Guest Lectures

- Spring 2020* **CSCI 7000: Advances in AI and Neuroscience**
Instructor: Prof. Tom Yeh
Department of Computer Science, University of Colorado Boulder
- Fall 2018* **CSCI 3002: Fundamentals of Human Computer Interaction**
Instructor: Profs. Ellen Do & Shaun Kane
ATLAS Institute, University of Colorado Boulder
- Fall 2018* **CSCI 7000: Technology the Young**
Instructor: Prof. Mike Eisenberg
Department of Computer Science, University of Colorado Boulder
- Fall 2017* **CSCI 3002: Fundamentals of Human Computer Interaction**
Instructor: Prof. Tom Yeh
Department of Computer Science, University of Colorado Boulder
- Fall 2017* **CSCI 7000: Technology the Young**
Instructor: Prof. Mike Eisenberg
Department of Computer Science, University of Colorado Boulder
- Fall 2015* **CSCI 4817: Database Systems (Watch: Finding a Bug in MySQL)**
Instructor: Prof. Richard Osborne
Department of Computer Science, University of Colorado Boulder

Guest Judge

- Spring 2018* **ATLS: Machine Learning for HCI (Project Feedback)**
Instructor: Prof. Ben Shapiro
ATLAS Institute, University of Colorado Boulder

Spring 2016 **CSCI 4830: Rapid Prototyping (Project Judge)**
Instructor: Prof. Tom Yeh
Department of Computer Science, University of Colorado Boulder

Fall 2015 **CSCI 4830: Big Data (Hackathon Judge)**
Instructor: Prof. Tom Yeh
Department of Computer Science, University of Colorado Boulder

Teaching Panels

Fall 2020 **CSCI 1000: Computer Science as a Field of Work and Study**
Instructor: Prof. Clayton Lewis
Department of Computer Science, University of Colorado Boulder

Fall 2018 **INFO 7000: Introduction to Doctoral Studies in Information Science**
Instructor: Prof. Leysia Palen
Department of Information Science, University of Colorado Boulder

Fall 2017 **CSCI 1000: Computer Science as a Field of Work and Study**
Instructor: Prof. Clayton Lewis
Department of Computer Science, University of Colorado Boulder

Fall 2016 **CSCI 4348: Startup Essentials (Entrepreneurial Computing Projects - watch)**
Instructors: Zach Nies & Prof. Rick Han
Department of Computer Science, University of Colorado Boulder

Teacher Training

Fall 2020 **Center for Teaching and Learning, University of Colorado Boulder**
How to be Anti-Racist in the Classroom
Disability Access: What You Need to Know as an Instructor
Student Support and Case Management Counseling and Psychiatric Services
Transitioning Roles: What to Expect as a First-Time Teaching Assistant
Keeping Your Options Open: Strategies and Resources for Non-Academic Careers
Finding Your Fit and Knowing Your Role as a Graduate Student
Getting Started with Contemplative Pedagogy
Using Humor in the Classroom
The University Lecture

Mentoring

Since 2017, I have mentored 21 high school, undergraduate, and graduate students spanning several disciplines across engineering and linguistics. In all collegiate cases, I developed recruiting materials, interviewed, hired, onboarded, and supervised our fantastic interns.

2020 **Arva Syed**
Undergraduate student in Creative Technology & Design
University of Colorado Boulder
Project: *Prototyping multimodal & tactile systems for multilingual child-robot interaction*

- 2020 **Aarjav Chauhan**
Graduate student in Creative Technology & Design
University of Colorado Boulder
Project: *Analyzing children's creative stories for linguistic indicators of reflection*
- 2020 **Shanli Ding**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Researching text-to-speech systems for synthesizing playful voices in child-robot interaction*
- 2020 **Vananh Le**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Researching text-to-speech systems for synthesizing playful voices in child-robot interaction*
- 2020 **Yifan Chen**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Analyzing children's cHRI storytelling data for measures of usability & engagement*
- 2020 **Kayla Kohake**
Master's graduate in Linguistics
University of Colorado Boulder
Project: *Analyzing children's stories for indicators of metacognitive reflection*
- 2018-2020 **Chloe Brown**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Developing mobile and tactile applications for child-robot interaction*
- 2018-2020 **Samuel Nesmith**
Undergraduate student in Mechanical Engineering
University of Colorado Boulder
Project: *Prototyping multimodal & tactile interactions for child-robot reflective storytelling*
- 2018 **Elsa Velazquez**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Integrating musical elements into child-robot voice interaction*
- 2018 **Bharat Narayanasamy**
High School Student
Science Discovery, STEM Research Experience Program
Project: *Analyzing teacher interviews to inform developmentally appropriate practice*
- 2018 **Sloan Woodberry**
High School Student
Science Discovery, STEM Research Experience Program
Project: *Designing tactile interactions in child-robot reflective storytelling*

- 2018 **Andrea Chamorro Quillupangui**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Developing multilingual voice platform for child-robot interaction*
- 2018 **Mel Plett**
Graduate student in Creative Technology & Design
University of Colorado Boulder
Project: *Designing stuffed animal embodiments for child-robot interaction*
- 2018 **Vi Nguyen**
Undergraduate student in Business Administration
University of Colorado Boulder
Project: *Designing stuffed animal embodiments for multilingual child-robot interaction*
- 2017-2018 **Boskin Erkocevic**
Undergraduate student in Electrical Engineering
University of Colorado Boulder
Project: *Developing a mobile application for dynamic listening in multilingual child-robot interaction*
- 2017-2018 **Chen Hao Cheng**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Prototyping a mobile web application for multilingual child-robot interaction*
- 2017-2018 **Dylan Cassady**
Undergraduate student in Mechanical Engineering
University of Colorado Boulder
Project: *Analyzing children's stories for linguistic indicators of engagement and complexity*
- 2017 **Christopher Zhu**
High School Student
Science Discovery, STEM Research Experience Program
Project: *Transcribing and translating children's oral stories for linguistic analysis*
- 2017 **Jamie Schreiber**
High School Student
Science Discovery, STEM Research Experience Program
Project: *Transcribing and translating children's oral stories for linguistic analysis*
- 2017 **Elise Carter**
Undergraduate student in Computer Science
University of Colorado Boulder
Project: *Transcribing and translating children's oral stories into physical artifacts*
- 2017 **Joia Reeder**
Undergraduate student in Technology, Arts, & Media
University of Colorado Boulder
Project: *Transcribing and translating children's oral stories into physical artifacts*

Service

2018 – present **Reviewer**
FabLearn 2020
Designing Interactive Systems (DIS) 2018

2017 **Student Volunteer**
CHI 2017

Community

2019 – present **AI Ethics in Early Childhood, Working Group**
National Head Start Association

2017 – present **Volunteer Substitute Preschool Teacher**
Children’s House Preschool

2013 – present **Guardian Scholar Mentor for Former Foster Youth**
University of Colorado Boulder

2013 – present **Guardian Scholar Mentor for Former Foster Youth**
University of Colorado Boulder

2019 – 2020 **Community Champion**
Futurebound Colorado, Early Childhood Innovation Ecosystem

2018 **Community Mentor**
OpenIDEO, Early Childhood Innovation Network

2016 – 2017 **Childcare Volunteer**
Boulder SURJ, Showing Up for Racial Justice

2014 – 2017 **Entrepreneurial Student Board Member**
New Venture Challenge, University of Colorado Boulder

Graduate

2020 – present **Faculty Search Committee**
College of Engineering and Applied Science

2020 – present **Antiracism & Inclusion Committee**
Department of Computer Science

2020 – present **Student Funding Awards Committee**
Institute of Cognitive Science

2018 – present **Executive Committee**
Department of Computer Science

2016 **Student Volunteer, Faculty Search Committee**
Department of Computer Science

Undergraduate

- 2013 – 2014 **Director of Academic Affairs**
CU Boulder Student Government
- 2013 – 2014 **AMA "Ask Me Anything" Fellow**
Department of Computer Science
- 2013 – 2014 **Chair of the Undergraduate Advisory Committee**
Department of Computer Science
- 2012 – 2013 **Finance Board Member**
CU Boulder Student Government
- 2012 – 2013 **Health Center Board Member**
CU Boulder Student Government
- 2012 – 2013 **Vice President**
Neuroscience Club
*Presented to the Board of Regents
to create a new Bachelor's degree in Neuroscience*

References

- **Clayton Lewis**
Professor
Department of Computer Science, University of Colorado Boulder
clayton.lewis@colorado.edu
- **Tom Yeh**
Associate Professor
Department of Computer Science, University of Colorado Boulder
tom.yeh@colorado.edu
- **Mark D. Gross**
Director
ATLAS Institute, University of Colorado Boulder
mdgross@colorado.edu
- **Ken Anderson**
Chair
Department of Computer Science, University of Colorado Boulder
kena@colorado.edu
- **f6s.com**
Read recommendations from 20+ professionals, including Drs. Sriram Sankaranarayanan, Tomasz Miaskiewicz, Gabe Johnson, Richard Han, Nikolaus Correll, Ken Anderson, and Clayton Lewis.