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## RESEARCH INTERESTS

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Gesture-based Interaction, Natural User Interfaces, Virtual/Augmented Reality, Computer Vision

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## EDUCATION

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### Ph.D. in Human-Centered Computing

University of Florida, Gainesville, FL

Expected Graduation: *May 2020*

- 4.0 Cumulative GPA
- Advisor: Jaime Ruiz

### Ph.D. in Computer Science (Degree not awarded; transferred to UF)

*August 2015 – August 2016*

Colorado State University, Fort Collins, CO

- 4.0 Cumulative GPA
- Advisor: Jaime Ruiz, Focus: Human-Computer Interaction

### B.S. in Computer Science

Degree Earned: *June 2015*

Seattle Pacific University, Seattle, WA

- 4.0 Cumulative GPA; Dean's List – 9 quarters, 2012-2015
- **Honors:** Graduated Summa Cum Laude, Alpha Kappa Sigma Honor Society, President's List

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## RELEVANT SKILLS

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- **Technical:** C/C++/C#, Java, Android, Python, R, HTML/CSS, Javascript, JQuery, PHP, SQL, MongoDB, Node.js, Keras, OpenCV, Unity3D, LaTeX, Git, SVN, Microsoft Kinect, Hololens, HTC Vive, Agile/Scrum
- **Design:** Photoshop, Illustrator, Premiere, Animate, Invision, Balsamiq, Davinci Resolve
- **Research:** User studies, Data analysis, Statistics, Focus groups, Affinity diagramming, Prototyping, Mentoring

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## RELEVANT EXPERIENCE

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### Graduate Research Assistant

*August 2015 – Present*

University of Florida, Gainesville, CO (August 2016 – Present)

Colorado State University, Fort Collins, CO (August 2015 – August 2016)

- Conducted user studies to research the natural use of gestures in communication
- Developed a video annotation tool utilizing state-of-the-art techniques to improve labeling performance
- Developed software for interacting with the Microsoft Kinect and Intel RealSense systems

### Software Design Intern

*June 2013 – August 2015*

Ballard Technology, Everett, WA

- Developed for the CoPilot avionics databus analyzer (C++/Win32/ATL), the company's main software product
- Designed and implemented new features as part of customer/user feedback, working with sales and support
- Actively involved in all aspects of software development from design to implementation to testing

## REFEREED CONFERENCE PAPERS

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- [1] David White, Ross Beveridge, Bruce Draper, Francisco Ortega, Rahul Bangar, Dhruva Patil, James Pustejovsky, Nikhil Krishnaswamy, Kyeongmin Rim, Jaime Ruiz, and **Isaac Wang**. 2019. User-Aware Shared Perception for Embodied Agents. In *2019 IEEE International Conference on Humanized Computing and Communication (HCC)*, Laguna Hills, CA, USA, 2019, pp. 46-51.
- [2] Jesse Smith, **Isaac Wang**, Julia Woodward, Jaime Ruiz. 2019. Experimental Analysis of Single Mode Switching Techniques in Augmented Reality. In *Proceedings of the 45th Graphics Interface Conference (GI '19)*. Canadian Human-Computer Communications Society, School of Computer Science, University of Waterloo, Waterloo, Ontario, Canada.
- [3] **Isaac Wang**, Jesse Smith, Jaime Ruiz. 2019. Exploring Virtual Agents for Augmented Reality. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI 2019)*, May 4–9, 2019, Glasgow, Scotland, UK. ACM, New York, NY, USA. Paper 281, 10 pages.
- [4] Pradyumna Narayana, Nikhil Krishnaswamy, **Isaac Wang**, Rahul Bangar, Dhruva Patil, Gururaj Mulay, Kyeongmin Rim, Ross Beveridge, Jaime Ruiz, James Pustejovsky, and Bruce Draper. 2018. Cooperating with Avatars Through Gesture, Language and Action. In *2018 SAI Intelligent Systems Conference (IntelliSys)*.
- [5] **Isaac Wang**, Pradyumna Narayana, Jesse Smith, Bruce Draper, Ross Beveridge, and Jaime Ruiz. 2018. EASEL: Easy Automatic Segmentation Event Labeler. In *Proceedings of the 23rd International Conference on Intelligent User Interfaces (IUI '18)*. ACM, New York, NY, USA.
- [6] Nikhil Krishnaswamy, Pradyumna Narayana, **Isaac Wang**, Kyeongmin Rim, Rahul Bangar, Dhruva Patil, Gururaj Mulay, Ross Beveridge, Jaime Ruiz, Bruce Draper, and James Pustejovsky. 2017. Communicating and Acting: Understanding Gesture in Simulation Semantics. In *12th International Conference on Computational Semantics (IWCS 2017) – Short papers*.
- [7] **Isaac Wang**, Mohtadi Ben Fraj, Pradyumna Narayana, Dhruva Patil, Gururaj Mulay, Rahul Bangar, J. Ross Beveridge, Bruce A. Draper, and Jaime Ruiz. 2017. EGGNOG: A Continuous, Multi-modal Data Set of Naturally Occurring Gestures with Ground Truth Labels. In *2017 12th IEEE International Conference on Automatic Face Gesture Recognition (FG 2017)*, 414–421.

## REFEREED POSTERS/WORKSHOPS

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- [8] Sarah Morrison-Smith, Heng Yao, **Isaac Wang**, Benjamin Lok, and Jaime Ruiz. 2018. Staying Alive with Virtual Humans. In *CHI '18 Extended Abstracts on Human Factors in Computing Systems (CHI EA '18)*. ACM, New York, NY, USA.
- [9] **Isaac Wang**, Pradyumna Narayana, Dhruva Patil, Gururaj Mulay, Rahul Bangar, Bruce Draper, Ross Beveridge, and Jaime Ruiz. 2017. Exploring the Use of Gesture in Collaborative Tasks. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17)*. ACM, New York, NY, USA, 2990-2997.
- [10] Sarah Morrison-Smith, Christina Boucher, **Isaac Wang**, and Jaime Ruiz. 2016. Opportunities for Supporting Large-Scale Collaborative Projects. In *Proceedings of Computer-Supported Cooperative Work and Social Computing (CSCW '16): Workshop on Large-scale Collaborative Projects to Affect Societal Change*.

## PRESENTATIONS AND DEMOS

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- “Exploring Virtual Agents for Augmented Reality,” **Paper Presentation**, ACM 2019 CHI Conference on Human Factors in Computing Systems (CHI'19), Glasgow, UK, May 2019.
- “Traffic Stop VR,” **Demo**, TEDxUF, University of Florida, Gainesville, FL, March 2018.

- “EASEL: Easy Automatic Segmentation Event Labeler,” **Paper Presentation**, ACM 23rd International Conference on Intelligent User Interfaces (IUI’18), Tokyo, Japan, March 2018.
- “Exploring the Use of Gesture in Collaborative Tasks,” **Poster Presentation**, Engineering Research Symposium, University of Florida, Gainesville, FL, February 2018.
- “EGGNOG: A Continuous, Multi-modal Data Set of Naturally Occurring Gestures with Ground Truth Labels,” **Poster Presentation**, IEEE International Conference on Automatic Face and Gesture Recognition (FG’17), Washington, DC, June 2017.
- “Exploring the Use of Gesture in Collaborative Tasks,” **Poster Presentation**, ACM Conference on Human Factors in Computing Systems (CHI’17), Denver, CO, May 2017.

## RESEARCH AND PROJECTS

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**Communicating with Computers (CwC)** – Research Assistant *August 2015 – Present*

- Studying human interactions involving gestural and non-verbal communication and enabling computers to understand and collaborate with humans in creative domains
- Ongoing project at Colorado State University and University of Florida, funded by DARPA

**Stratus (Voice Cloud Visualizer)** – Project Lead *January 2015 – June 2015*

- Created Android application to visually analyze a conversation by creating a live word/tag cloud that shows the frequency of spoken words relative to others based on the word’s size
- Developed novel, efficient algorithm to generate a word cloud on the fly with real-time constraints
- Managed and collaborated with a team of three to develop system from the ground up
- Won best oral presentation, Erickson Undergraduate Research Conference, SPU, 2015
- Presented in poster session, Erickson Undergraduate Research Conference, SPU, 2015

**Anreal: Android Virtual Reality** – Independent Research *December 2013 – June 2014*

- Project designed to utilize an Android tablet as a virtual reality head-mounted display, before Google Cardboard
- Streaming of VR-enabled PC games onto an Android device, with real-time head tracking
- Designed system to directly manipulate a PC game’s memory, allowing for controlled rotation of in-game camera angles based on the Android tablet’s orientation
- Won best poster award, Erickson Undergraduate Research Conference, SPU, 2014
- Demonstrated prototype at Microsoft’s TEALS field trip, 2014

## PROFESSIONAL SERVICE

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**Volunteer Reviewer**, Various, 2017-Present

- Reviewed papers for ACM CHI, ICMI, SIGGRAPH, IEEE VR

**Student Mentor**, University of Florida, 2017-Present

- Mentored undergraduate students (including both URAs and summer NSF IMHCI REU interns)
- Worked closely with students on how to conduct user studies and perform research in gesture interaction

**CHI Student Volunteer**, ACM SIGCHI, 2016

- Contributed 20 hours of volunteer work at the 2016 ACM Conference on Human Factors in Computing Systems
- Helped ensure the conference ran smoothly, from attending the registration desk to assisting with speaker sessions

**El Centro Math-Science-Tech Day Volunteer**, Colorado State University, 2015

- Helped conduct workshops for fourth graders from underserved communities
- Assisted students in learning computer science concepts with the Scratch visual programming language

**SPU Developers Club Co-founder and Financial Officer**, Seattle Pacific University, 2014-2015

- Co-founded the SPU Developers club to promote CS and allow students to engage with more than just courses
- Planned and arranged club activities (inc. tour of Microsoft campus, visit to Valve, hackathon, and LAN party)
- As financial officer, budgeted and funded club functions, working closely with the SPU student association
- Efforts resulted in Club of the Year award for the 2014-2015 academic year

**ECS Student Council Computer Science Representative**, Seattle Pacific University, 2014-2015

- Advocated for the interests of the CS department as part of the Engineering & Computer Science student council
- Planned departmental events and designed new banners and graphics for the department bulletin board

**Microsoft TEALS Field Trip Volunteer**, Seattle Pacific University, 2014

- Helped represent SPU and promote computer science education at TEALS event for high school CS students
- Demonstrated Anreal research (see Projects), allowing many students to experience virtual reality for the first time

## **AWARDS AND ACHIEVEMENTS**

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- **Harris Corporation Communication Graduate Fellowship**, University of Florida, 2019
- **Gartner Grad Scholarship**, University of Florida, 2018
- **Graduate School Fellowship**, University of Florida, 2016-Present
- **Who's Who Among Students**, Seattle Pacific University, 2015
- **Kenneth Smith Endowment**, selected by the CS department, Seattle Pacific University, 2014-2015
- **Trustees' Scholar Award**, half-tuition scholarship, Seattle Pacific University, 2012-2015
- **Outstanding Physics Student Award**, Edmonds Community College, 2012