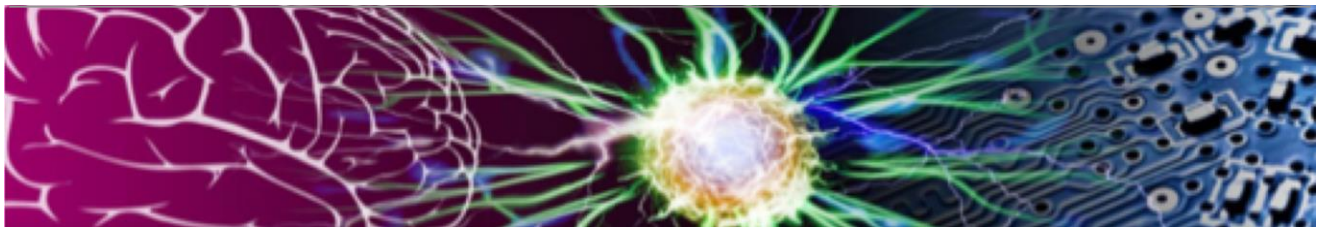
INSTITUTE OF COGNITIVE SCIENCE

Newsletter | Fall Edition | 2019



ICS ONLINE COURSE PROGRESS

ICS first reported the development and launch of a new ICS online course called Mind and Machines in the fall of 2018. This course is an Institute of Cognitive Science Computer Science course that introduces students to the study of the mind as an inter-disciplinary field with roots in Computer Science along with Psychology, Education, and a variety of other fields. ICS spoke with David Quigley, ICS Research Associate and Course Instructor on progress with the course and plans to expand the reach of the course.

ICS: How is the course being received, a year after its introduction?

The course is going very well! We've had some great success, with students figuring out how these concepts apply to what they've done in their lives and what they'd like to do going forward. We've even had some students who change their career objectives, saying things like "I didn't even know this stuff was out there!"

ICS: Had the course changed in any way, content wise? If so how?

The main consideration has been expanded opportunities to go in greater depth. Iterations on class discussions in the online forums has helped us figure out what areas provide for rich discussion. This semester I've been working these topic areas into class-sized discussion, getting students to go into even greater depth and fostering discussion and debate about the ideas in the course.

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IN THIS ISSUE

Digital newsletters with active hyperlinks are found at www.colorado.edu/ics/AboutUs

FROM THE DIRECTOR

Friends, what a year it has been! Our hard work is paying off: 2019 was an outstanding year for our research endeavors, and our academic program review process is exceeding expectations.

A Record Year for Research. We continue to enjoy growing, and ***record levels*** of annual grant expenditures. This increase in funding directly translates into new research and training opportunities for our graduate students and other early career scholars, and important impacts on society. Our research is pioneering the use of artificial intelligence to detect changes in mental health, understanding the health risks and benefits of using cannabis to treat chronic pain, blending cognitive neuroscience and computer modeling to understand human emotions, and developing high-quality curriculum to transform middle and high school science education.

Academic Program Review Update. This semester we completed our External Review Committee (ERC) visit and we participated in the penultimate stage in this multi-year process: the unit check-in. The ERC visit was a ***huge success*** - thanks to all of you! Their final report showed that they appreciated our unique strengths and impacts, as well as understanding our challenges. This report fed into the analyses performed by the campus-level review committee, which then makes recommendations for action to the Institute, to various Deans, and the Provost. At the unit check-in, we were given a preliminary copy of these recommendations and an opportunity to provide feedback. The final stage will take place next semester, when the recommendations will be approved by the Provost.

I am extremely pleased to inform you that this committee heard and engaged with all of our concerns, and their recommendations are fully consistent with our needs and expectations. In particular, they heard our voices, and our pain, with respect to: (1) transportation between our CINC facility and main campus, (2) establishing a sustainable revenue model for our educational programs, and (3) and growing and replenishing our outstanding faculty. I know that we have heard these kind words from the campus in the past, but this time does feel different, and I am optimistic that positive and significant change can come from this exercise.

I hope you all have plans for relaxing and refreshing yourselves over the end-of-year break as next year is shaping up to be action packed:

- **Cognitive Neuroscience Open Faculty Search**: We completed interviews with four outstanding candidates this semester. We will need to work together to close the deal this spring semester and establish a smooth transition for this new community member.
- **Artificial Intelligence Open Faculty Search**: We have been approved to search at the Associate and/or Full Professor level, at the intersection of artificial intelligence and human cognition. We are working with partner units now to develop the job description, with the aim of convening a search committee in spring semester. We anticipate conducting interviews next Fall 2020.
- **New Pilot Study Fund**: Our Faculty and Executive Committee have authorized a new program whereby each year we will set aside funds to support pilot studies, with the aim of strengthening our grant development pipeline. We hope to fund the first round of studies next semester. Details on how to participate are forthcoming.

Thanks for being such wonderful colleagues! I look forward to seeing you all next year.

Tammy Sumner, ICS Director

ICS ONLINE COURSE GROWTH cont.

ICS: What are the plans for this to become a Coursera course, and what are the advantages to this?

Coursera Cognitive Science Specialization, Mind + Machine, is launched! This gives learners on all paths of life access the same transformative course materials that we're using in our online and blended on campus offerings. The big difference is that they don't have access to the moderation and feedback from a live in person (or remote) instructor.

ICS: How is your experience teaching the course and supporting students evolving?

I've really expanded my depth of understanding for the axiom that students come from everywhere, with a wide variety of expectations and prior knowledge. I've been working to expand content within the course to support students in understanding the fundamentals that come into play in our curriculum. I'm also finally starting to see the bigger picture of where and why students are struggling with content, and understanding how I need to change instructions or provide different guidance to get students where they need to be.

Original article from Fall 2018 can be found at https://www.colorado.edu/ics/sites/default/files/attached-files/newsletter_fall_2018_ics_final.pdf

ICS FACULTY SPECIAL MENTIONS

Congratulations to **Donna Caccamise** for her appointment to the Academic Futures/Financial FuturesOnline Strategy Work Group with the goal of coordinated use of state-of-the-art technology to create a CU Boulder-specific strategy for a spectrum of education modalities from blended learning to online and distance education.

Cinnamon Bidwell, was named by Governor Jared Polis and with the consent of the senate as the Chair for the Institute of Cannabis Research Governing Board. The Governing Board guides the role and mission of the Institute to conduct or fund research related to cannabis and publicly disseminate the results of the research. It will also oversee and approve the annual budget of the Institute, advise any Colorado institutions of higher education on the development of cannabis related curriculum including recommendations to the Colorado Commission on Higher Education on approval of any cannabis related certifications or degrees. Congratulations!

Congratulations to **Peter Foltz** who was inducted as a Fellow of the Society of Text and Discourse.

Continued on page 4…

PUBLICATION HIGHLIGHTS

Amon, M. J., Vrzakova, H., & D'Mello, S. K. Beyond dyadic coordination: Multimodal behavioral irregularity in triads predicts facets of collaborative problem solving, Cognitive Science.

Ellingson, J.M., **Bidwell, L.C.**, Hopfer, C.J., Hutchison, K.E., & Bryan, A.D. (2019). Correlates and potential confound of cannabis withdrawal among high-risk adolescents. Journal of Studies on Alcohol and Drugs, 80(5), 557–562.

Hagerty, S.*, Ellingson, J., Helmuth, T., **Bidwell, L.C.**, Hutchison K., Bryan A. (2019). An overview and proposed research framework for studying co-occurring mental and physical health dysfunction. Perspectives on Psychological Science.

Karoly, H.C., Mueller, R.L., **Bidwell, L.C.**, & Hutchison, K. E. (in press). Cannabinoids and the Microbiota-Gut-Brain-Axis: Emerging Effects of Cannabidiol and Potential Applications to Alcohol Use Disorders. Alcoholism: Clinical and Experimental Research.

Palmer, R.H.C., McGeary, J., Knopik, V., **Bidwell, L.C.**, & Metrk, J. (2019). CNR1 and FAAH variation and affective states induced by marijuana smoking. The American Journal of Drug and Alcohol Abuse.

YorkWilliams, S.*, Gust, C.S., Mueller, R., **Bidwell, L.C.**, Hutchison, K.E., Gillman, A.S., & Bryan, A. (2019). The New Runner's High? Examining Relationships Between Cannabis Use and Exercise Behavior in States with Legalized Cannabis. Frontiers in Public Health.

Gardiner, C.K., Hagerty, S.A., & **Bryan, A.D.** (in press). Stress and number of servings of fruit and vegetables consumed: Buffering effects of monetary incentives. Journal of Health Psychology.

Continued on page 20…

Institute of Cognitive Science
UNIVERSITY OF COLORADO **BOULDER**

ICS FACULTY & FELLOWS SPECIAL MENTIONS

William Penuel was officially inducted in ceremonies an ISLS Fellow in June, and NAE in October. Congratulations!

Congratulations to **Wayne Ward** for his re-appointment as ICS Research Professor.

Christine Yoshinaga-Itano who received the honor of presenting the Judith S. Gravel Memorial Lecture at Vanderbilt University in Nashville, Tennessee. Congratulations!

Congratulations to **Matt Jones**, ICS Fellow, Director of the Center on Research on Training, and Associate Professor of Psychology and Neuroscience, published his first article in Physics. The paper shows how mathematical tools from cognitive modeling can be used to characterize quantum entanglement or contextuality. ones, M. (2019). Relating causal and probabilistic approaches to contextuality. Philosophical Transactions of the Royal Society A, 377, 20190133. https://royalsocietypublishing.org/doi/pdf/10.1098/rsta.2019.0133

ICS FACULTY PRESENTATION HIGHLIGHTS

Bidwell, L.C, Gibson, L.P.*, Gust, C.L.*, Ellingson, J.M., York Williams, S.L.*, Sempio, C., Klawitter, J., Bryan. A., **Hutchison, K.E.** (December, 2019). Investigating Sex as a Moderator of Acute Objective and Subjective Intoxication after Ad Libitum Cannabis Concentrate Use. Paper presentation at the American College for Neuropsychopharmacology. Orlando, Florida.

Bidwell, L.C. (June, 2019). Self-Administration of Legal Market Flower and Concentrate Cannabis: Cannabinoid Blood Levels, Subjective Intoxication, and Neurobehavioral Outcomes. Paper presentation at the 29th Annual International Cannabinoid Research Society (ICSR) Symposium on the Cannabinoids, Bethesda, Maryland.

Bidwell, L.C. & Karoly, H.C. (June, 2019). Exploring the impact of THC and CBD potency in concurrent users of alcohol and cannabis. In Gass (Chair), The Impact of Comorbid Alcohol and Cannabis Use on Cognition and the Brain: A Translational Approach. Symposium presentation (accepted) at the annual meeting of the Research Society on Alcoholism. Minneapolis, Minnesota.

D'Mello, S. presented at AIED 2019 in Chicago, IL

D'Mello, S. presented at EDM 2019 in Montreal, Canada

Continued on page 21…

EXECUTIVE COMMITTEE UPDATE

A report by ICS Director Tammy Sumner

Welcome New ICS Executive Committee Members!

- Leanne Hirshfield (Associate Research Professor - ICS)
- David Quigley (RA/Instructor - ICS/CS)
- Chenhao Tan (CS – ICS Fellow)

In a separate process, the graduate students wisely selected their outstanding Executive Committee Representative.

- Norielle Adricula (PhD Student Dept of Linguistics & ICS)

We are grateful for the following members who will continue to serve on the Executive Committee:

- Cinnamon Bidwell (ICS Assistant Professor)
- James Martin (ICS and CS Professor)

Ex Officio members:

- Donna Caccamise (ICS Associate Director)
- Matt Jones (CRT Director)
- Nicole Speer (INC Director of Operations)
- Tamara Sumner (ICS Director)

Thank you to members who are stepping down after their dedicated service to the ICS community. Please be sure to relay your appreciation to:

- Christine Brennan (SLSH - ICS Fellow)
- Mike Mozer (ICS/CS Professor)
- Karli Watson (RA/Instructor - ICS/Psyc)
- Shannon McKnight (PhD student in Psyc & Neuro & ICS)

CINNAMON BIDWELL TENURE TRACK APPOINTMENT

Cinnamon's tenure track appointment as ICS Assistant Professor was approved by the University administration and the Regents. Congratulations!

ICS: How do you expect your role at ICS to change as a result of the promotion?

It's an exciting opportunity to step into a broader role that is more integrative in terms of research, teaching, clinical services, and leadership opportunities at the Institute, the Department of Psychology and Neuroscience, and CU more broadly.

ICS: What are some of your goals/hopes as an ICS Faculty member?

I am hoping to foster growth and depth in my lab as a core research arm of the Brain, Health, and Wellness component of the ICS strategic vision. Building on my already generative relationships with ICS and Psychology colleagues, I look forward to extending my own research, and the collaborative work of CU REACH, as leading contributors to the cannabis and health research field.

ICS: Are you teaching this semester?

This year, I am teaching Cognitive Behavioral Therapy Practicum for clinical psychology graduate students, which includes didactic training and intensive individual supervision for graduate therapists taking on their first clinical cases. It's a blast!

Cinnamon's current research investigates the direct neurobiological effects of drugs of abuse, including high potency marijuana and cannabinoids in psychiatric and medical populations, and the direct physiological and behavioral effects of cannabinoids as they pertain to both their abuse potential and potential therapeutic effects in observational as well as double-blind, placebo controlled human laboratory studies.

ICS OFFICE NEWS

The ICS Muenzinger office has moved!
Please note that Jean, Anna and student assistants now work in room **MUEN D418,** one door down from their previous office space.

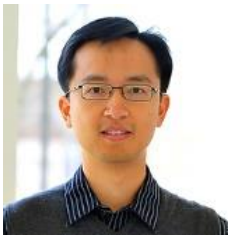
Please welcome **Tracey Parnaby** to the ICS-CINC staff. She will be working at the CINC front desk location ½ time in the afternoon, Monday thru Friday. Tracey comes to ICS with experience in front office school administration. Front-desk related requests (such as borrowing projectors, room reservations requests, etc.) can now be referred to Tracey, who will also be assisting with a wide variety of ICS business functions.
Reach Tracey at 303-735-5250 and tracey.parnaby@colorado.edu

Ellen MacKenzie's duties are changing with increased time in the ICS Finance Office where she will work more closely with finance, payroll, and HR functions.

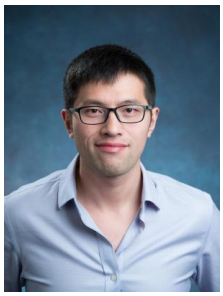
Please welcome the 2019-2020 student assistants.

- Working at the MUEN office: Kayla Ezell, Abena Gyimah, Annette Emanyonu.
    - Shout out to Kayla who has returned to us for a third year of work, and is a second-generation ICS student assistant. Her sister worked for us too!
- Working at the CINC office: Kylee Smith

NEW ICS FELLOWS – WELCOME!



Tom Yeh
Assistant Professor Computer Science.
Tom's research focuses on the intersection of human computer interaction and AI, in areas such as accessibility, ethics, design, evaluation, and STEM education, with a special mission to support underserved children including children with visual impairments or children in adverse environments.



Chenhao Tan
Assistant Professor Computer Science and Information Science
Chenhao 's research focuses on language and social dynamics, human-centered machine learning, and multi-community engagement. He also explores computational social science, natural language processing, and AI.

Jintae Lee
Associate Professor LEEDS School of Business
Jintae's research focuses on text mining user general contents (UGC) such as tweets and user postings during disaster situation, to identify patterns in both form and content. He is also interested in text mining cultural differences.

ICS FELLOWS PRESENTATIONS

Bryan, A., York Williams, S., Gibson, L., Gust, C., Mueller, R., Giordano, G., & Hutchison, K. (July, 2019). Older adult cannabis users exercise more than non-users in the context of a physical activity intervention. Poster presented at the Gordon Research Conference: Cannabinoid Function in the CNS, Castelldefels, Spain.

Hidde MC, **Bryan A.**, Messersmith WA, Cockburn MG, Leach HJ. (November, 2019). Testing Activity Correlates in Colorectal Cancer Survivors (TACTICS): A Clinical Trial Protocol. Poster presented at the Colorado Cancer Coalition Symposium, Lakewood, CO.

Morris, B., Helmuth, T., Giordano, G., & **Bryan, A.** (May, 2019). Changes in TNF-α, IL-6, and IL-18 Predict Depression Following a 16-Week Exercise Intervention in Older Adults. Poster presented at the Association for Psychological Science Convention, Washington, DC.

Ostendorf, D.M. Snell-Bergeon, J.K., Lande, J.P., Barón, A.E., **Bryan, A.D.**, Schmiege, S.J., Cummiskey, K., Thomas, D.M., Comstock, D., Melanson, E.L., Catenacci, V.A. (June, 2019). The optimal threshold of device-assessed physical activity required to predict achievement of clinically significant weight loss at 24 months: A receiver operating characteristic curve analysis. Paper presentation at the sixth International Conference on Ambulatory Monitoring of Physical Activity and Movement, Maastricht, Netherlands.

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ICS FELLOW SPOTLIGHT

Congratulations to **Ann Eisenberg** for her rise to Senior Research Associate.

Special thank you to **Zachary Kilpatrick** assistant professor, Applied Mathematics for being the very first ICS community member to reply to our call for newsletter content! His research interests include Mathematical neuroscience, Spatiotemporal pattern formation, Stochastic dynamics of neural activity, Evidence accumulation and decision making, and Dynamics of collective decisions.

He also recently received a grant as a PI: "Spatiotemporal neural dynamics of visual decisions"; NSF DMS – Mathematical Biology ($249,999). Congratulations!

Zach would like to recognize Ph.D. Student Fellowship winner Subekshya Bidari for receiving the Dissertation Fellowship ($20,000) for the American Association for University Women. Congratulations Subekshya!

ICS FELLOWS AWARDS

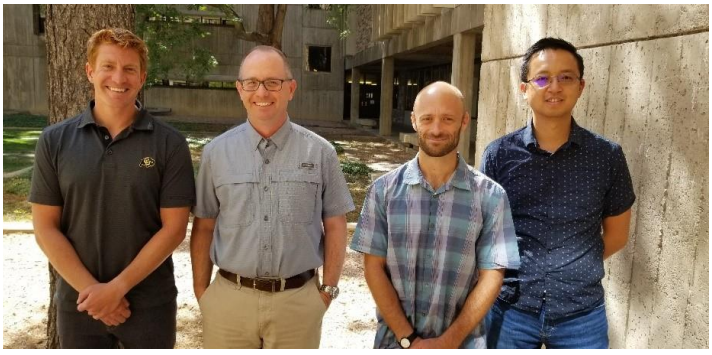
Chenhao Tan, assistant professor of computer science, received an NSF CRII award titled “Harnessing Machine Learning to Improve Human Decision Making: A Case Study on Deceptive Detection”. Congratulations.

CENTER FOR RESEARCH ON TRAINING UPDATE

From Matt Jones: The main activities of CRT this semester have revolved around a new collaboration with faculty in the Civil Engineering and Computer Science, funded by NSF’s ‘Future of Work at the Human-Technology Frontier’ program.

The collaboration project ‘Improving Construction Work Performance through Human-Centered Augmented Reality’ has developed a new space in the College of Engineering and Applied Science: C3P (Civil, Construction, Computer Science, Psychology) Collaboratory. The team and their students have been developing and testing initial prototypes that allow participants to adjust the detail of information shown on an augmented display (AR) as well as display sequential information. While these initial AR prototypes have utilized smartphone devices, the C3P Collaboratory is currently integrating these initial AR applications on AR headsets. While the initial prototypes are being tested with students at CU Boulder, the research team has also been recruiting construction craft professionals to participate in future phases of the research. Ultimately, the research team will examine how the detail and origin of information influences human behavior and performance.

CU Boulder Research Team, from L to R: Matthew Hallowell (Co-PI), Paul Goodrum (PI), Matthew Jones (Co-PI, Tom Yeh (Co-PI).



DONORS

ICS thanks the following fall semester donors for their generous contribution to the Institute.

Institute of Cognitive Science Fund
Dr. Kirsten Butcher
And
Mr. Richard Hanson

Bidwell Lab Fund
Margaret Blazek

CU REACH
Tom Yoksas

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www.colorado.edu/ics

READ PREVIOUS NEWSLETTERS

http://www.colorado.edu/ics/about

Digital newsletters with active hyperlinks are found at:

www.colorado.edu/ics/about-us

CU REACH CENTER UPDATE

The Center for Research and Education Addressing Cannabinoids and Health (CUREACH) Center's **Angela Bryan** was awarded a new grant *Exploring the anti-inflammatory properties of cannabis and their relevance to insulin sensitivity*, nicknamed SONIC. SONIC stands for Study on Nutrition, Insulin, and Cannabis. The study will investigate the effects of cannabis on inflammation and blood sugar regulation.

Kent Hutchison has a new Coursera course, *Medical Cannabis: The Health Effects of THC and CBD*, which is free to CU faculty, staff, and students. Others can audit the course for free. (See interview with Kent on page xxx)

Cinnamon Bidwell was promoted to tenure track ICS faculty and named chair of the Colorado State Board of Cannabis Research and Policy from 2019 to 2023.

FREE ONLINE MEDICAL CANNABIS COURSE: A CHAT WITH KENT HUCHISON

ICS: Why did you develop "Medical Cannabis: The Health Effects of THC and CBD" specialization course?

I originally developed the course because there is a lot of interest among our undergraduates in this topic given enormous growth in industry related jobs. But there is also a lot of interest in these topics across the globe so I also adapted the course for the Coursera platform to reach a much broader audience of health care providers, patients, and loved ones as well as those interested in the industry.

ICS: Is the course still available free as an audit, and free to CU students, faculty, and staff?

People associated with CU can take it free. People always have the option of auditing it for no cost. People who pay $49/mo get access to additional materials and assessments and receive a certificate if they pass the assessments.

ICS: Research on this topic is emerging and changing quickly – how often do you anticipate the course content to be updated, or will the content stay static?

I will be updating it each year as I update my materials for my in person class (so early spring semester). As a quick example, I need to add information on the lung/vaping crisis as well as other issues

ICS: Why would you recommend members of the ICS community take this course?

People in the ICS community may want to know more about the topic for both personal and professional reasons. We all have family or friends who deal with things like cancer or sleep problems. And of course, many of us are interested from a research perspective (e.g., how does cannabis impact cognition and learning).

Register for the course at https://www.coursera.org/specializations/health-effects-cannabis-thc-cbd

CU students, faculty, staff can take the full course for free through the pilot program called "CU on Coursera". Follow the instructions on the "CU on Coursera" OIT page to login and access the course. The course is available free to any person who would like to audit the course. Those not affiliated with CU who would like a completion certificate after taking the assessments will need to subscribe to Coursera at $49/month. When you audit a course for free, you can access the course materials without graded assignments or the ability to earn a certificate.

INTERMOUNTAIN NEUROIMAGING CONSORTIUM

The INC welcomed four new staff members this fall. Mr. Suebin Song (Integrative Physiology, '21), Mr. Rafael Orozco Leon (Psychology & Neuroscience, '21), and Ms. Kiara Rodriguez (Psychology & Neuroscience, '22) joined the INC team as the first INC interns ("INCterns"), and Dr. Lena Sherbakov joined the INC team as INC's first Data Scientist.

Since its inception in 2011, INC has become a national leader in providing research teams with high-quality neuroimaging data for a range of participant populations. This expansion of staff will enable INC to enhance its services to include support for running participants as well as for data storage, processing and analysis.

Left to right: Suebin Song, Denny Schaedig, Teryn Wilkes, Rafael O Leon, Lena Sherbakov, Kiara Rodriguez, Nicole Speer. Absent are Executive Director Marie Banich and team members Keely Garcia, Kendra Huber, Pat Mullins, Keli Salyards.

The INCternship program is a paid research internship for promising CU undergraduate students, to help them get exposure to neuroimaging research and develop skills that will prepare them for graduate school and neuroimaging careers. In addition to providing a valuable training opportunity for CU undergraduates, the INCterns will be available to run participants through MRI studies at INC beginning in early 2020.

This fall the INCterns have been in training to function as general RAs for all labs that could use additional support with collecting data at INC (consenting participants, running participants through pre/post testing, as well as taking participants to the scanner and running scripts/other equipment during scans). Kiara, Suebin, and Rafael have proven to be exceptional, curious learners and will greatly expand the data collection support INC offers to its clients.

Dr. Lena Sherbakov has undergraduate degrees in Physics and Mathematics from the College of William and Mary, a M.S. in Applied Math from the University of Washington, and a Ph.D. in Computational Neuroscience from Boston University. She worked on neuroimaging analyses at Oregon Health & Science University, worked as a logistician for Doctors Without Borders, and most recently worked for Airbus developing machine learning and deep learning solutions to visual recognition and search problems.

Lena moved to Gold Hill with her partner last month, and has been enjoying getting to know her mountain community and building furniture for her new home. Lena will be meeting with research teams in the coming months to better understand current MRI data processing and analysis pipelines, to understand were INC can be most supportive to research teams and enable them to move more efficiently from data collection to study results.

If you would like to hear more about how INC can support your research by helping you incorporate neuroimaging approaches into your projects, please contact Dr. Nicole Speer, INC Director of Operations at 303-492-2875 or by e-mail at Nicole.Speer@colorado.edu.

SAVE THE DATE FOR BRAIN AWARENESS WEEK 2020!

Brain Awareness Week is set for March 12-19, 2020. This year's events feature talks on nutrition, stress, and mental health; real-time neurofeedback; and adolescent brain development, as well as Community Brain Day, when neuroscience-focused labs and student groups across the Front Range will gather to share their research with the broader community. Student-focused events featuring mental health awareness will include a Brain Health Fair and Mental Health Awareness Hike (see details on page 20.)

inquiryHub GROWTH CONTINUES

inquiryHub research partnership welcomes **Kate Henson** to the team. Kate's focus at inquiryHub is Teacher Professional Learning from a research and application perspective.

Kate is a former high school science teacher. She holds a BS and MS in Biology and a PhD in Curriculum and Instruction, Science Education. Her research interests focus around student and teacher learning in classroom and professional development contexts.

ICS: In the five years of inquiryHub Biology course collaborative co-design and development, what do you know about who is using the online, open source high school course curricula?

iHub: We have conducted Professional Learning workshops with teachers at Denver Public Schools, Bellevue Washington School District, state of Louisiana schools to name a few. The exciting feature of open source curricula is that anyone can access and use the materials. We are seeing teachers from at least 20 states are using iHub Biology materials. We are in the process of analyzing user data in 2020.

ICS: Where do you see the most interest coming from in the future? Is there a plan on where you'd like to see the Biology materials being used?

iHub: We will reach out to larger school districts that have shown an interest in Open Educational Resources (OER) through the adoption of materials from Engage NY (available from Expeditionary Learning). The majority of districts are small, geographically distributed, and it would be beneficial for these smaller districts to use our free curriculum materials. One challenge is how to help these smaller districts connect with one another about using our OER, and we will be focused on building a plan to help these districts.

ICS: What is coming in 2020 for iHub Biology?

iHub: We will host a Teacher Professional Learning Summer Institute on the CU campus in Summer of 2020. This will be a Biology 101 workshop for teachers new to our curriculum. And in response to demand from out of state districts, several workshops in districts located in Washington and Louisiana are planned, with additional workshops in the planning stages. The curriculum was awarded the Next Generation Science Standards digital Design Badge by Achieve, for the Evolution unit of the Biology Course. We hope to be nationally recognized for the Genetics and Ecosystems units as well.

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NEW PHYSIO-BEHAVIORAL-NEURO LAB: MUEN D414

Sidney D'Mello and Leanne Hirshfield tells us about this new lab. The lab is a:

- A dynamic on-campus physio-behavioral-neuro lab for ICS research
- Mainly for those who do not have on-campus labs (but open to all)
- The idea is for a no-frills, reconfigurable test space, flex based on needs
- Fall '19 setup includes:
    - Two high-fidelity setups for collecting eye tracking, fNIRS, EEG, physiology, camera
    - Three consumer-off-the-shelf setups for collecting multimodal data during collaboration
    - Three workstations for collecting behavioral data (no sensors)

The proposed usage model is for

- Faculty meet each semester to discuss data collection needs and pooling of resources
- Figure out thorny issues like data security, computer setups, schedules, planned personnel for running data collection and analyzing data, etc.
- Each nominates a designated student/staff rep to coordinate details (of usage) "it means that each person who intends to use the space appoints a person who helps maintain the lab."

The goal is to conduct great science with help from ICS staff but with minimal oversight. The space is not intended to be a place to hold lab meetings or for folks to work.

A message from Leanne: "The reason that we are being vague here is that there really is no 'one size fits all' way at this point to have ICS faculty & students use the equipment without making sure we've accounted for the many different variations of 'thorny issues' noted above."

We look forward to hearing more about this lab!

inquiryHub GROWTH cont.

inquiryHub's SchoolWide Labs

The Schoolwide Labs project works with Denver Public School middle school science and dedicated STEM teachers to integrate and promote computational thinking into classrooms. Teachers and researchers collaboratively design Storyline units focused on phenomena. Students use the sensing platform to conduct a variety of data-enabled science and engineering investigations that are rooted in personally relevant questions about their community and their lives. This sensing platform enables teachers and students to envision a new type of "school-wide science lab" - moving beyond specialized classrooms where students go to conduct experiments to imagining the entire school and neighboring environment as a potential space for scientific inquiry. As such, this expanded environment for "doing science" enables teachers across STEM disciplines to creatively integrate computational thinking (CT) activities into their disciplinary instruction.

NEW SHINE LAB

System **H**uman-**I**nteraction with **N**IRS and **E**EG Lab

Leanne Hirshfield directs the SHINE Lab housed at CINC. The lab utilizes non-invasive cognitive, physiological, and behavioral measurement devices. For cognitive state measurements, this includes two NIRX Sport wireless fNIRS devices with embedded EEG electrodes for studying a range of human-machine teaming scenarios with up to 3 human team members per study. With this equipment, Leanne research fits at the intersection of machine learning, psychology, biomedical engineering, and human-computer interaction. She uses fNIRS to hyperscan the brains of multiple people at the same time while they interact with one another during a variety of Human-Machine Teaming (HMT) scenarios. When not in use at the CINC lab, the portable equipment will be used in MUEN D414 new lab.

As an example of one avenue of HMT research, one of Leanne's NSF grants involves the creation of an intelligent agent that monitors the mental states (e.g., visual perceptual load, auditory perceptual load, working memory load, frustration) of human teammates while they conduct search and rescue tasks while wearing augmented reality (AR) glasses. The content shown through the AR glasses adapts in real-time based on each teammate's mental state, to optimize the overall performance of the team. Other tracks of research apply deep learning techniques on high-density fNIRS data to better predict the social, cognitive, and affective states of the various team-members as they work on a joint task. As a firm believer that the best research happens at the fringes of disciplines, Hirshfield is always looking for interesting collaborative projects. Students and faculty who have ideas for experiments or joint research projects are encouraged to email Leanne at Leanne.Hirshfield@colorado.edu.

Picture at training day for the new NIRX devices, which can be used for Hyperscanning.

WANT TO KNOW YOUR MENTAL HEALTH STATUS? THERE'S AN APP FOR THAT

By Lisa Marshall • CU Strategic Relations
Published: Nov. 12, 2019
https://www.colorado.edu/today/2019/11/12/want-know-your-mental-health-status-theres-app

Thanks to advances in artificial intelligence, computers can now assist doctors in diagnosing disease and help monitor patient sleep patterns and vital signs from hundreds of miles away.

Now, CU Boulder researchers are working to apply machine learning to psychiatry, with a speech-based mobile app that can categorize a patient's mental health status as well as or better than a human can.

"We are not in any way trying to replace clinicians," says Peter Foltz, a research professor at the Institute of Cognitive Science and co-author of a new paper in *Schizophrenia Bulletin* that lays out the promise and potential pitfalls of AI in psychiatry. "But we do believe we can create tools that will allow them to better monitor their patients."

Nearly one in five U.S. adults lives with a mental illness, many in remote areas where access to psychiatrists or psychologists is scarce. Others can't afford to see a clinician frequently, don't have time or can't get in to see one.

Even when a patient does make it in for an occasional visit, therapists base their diagnosis and treatment plan largely on listening to a patient talk – an age-old method that can be subjective and unreliable, notes paper co-author Brita Elvevåg, a cognitive neuroscientist at the University of Tromsø, Norway.

"Humans are not perfect. They can get distracted and sometimes miss out on subtle speech cues and warning signs," Elvevåg says. "Unfortunately, there is no objective blood test for mental health."

In pursuit of an AI version of that blood test, Elvevåg and Foltz teamed up to develop machine learning technology able to detect day-to-day changes in speech that hint at mental health decline.

For instance, disjointed speech—sentences that don't follow a logical pattern—can be a critical symptom in schizophrenia. Shifts in tone or pace can hint at mania or depression. And memory loss can be a sign of both cognitive and mental health problems.

"Language is a critical pathway to detecting patient mental states," says Foltz. "Using mobile devices and AI, we are able to track patients daily and monitor these subtle changes."

The new mobile app asks patients to answer a 5- to 10-minute series of questions by talking into their phone. Among various other tasks, they're asked about their emotional state, asked to tell a short story, listen to a story and repeat it and given a series of touch-and-swipe motor skills tests.

In collaboration with Chelsea Chandler, a computer science graduate student at CU Boulder, and other colleagues, they developed an AI system that assesses those speech samples, compares them to previous samples by the same patient as well as the broader population and rates the patient's mental state.

In one recent study, the team asked human clinicians to listen to speech samples of 225 participants—half with severe psychiatric issues; half with healthy volunteers—in rural Louisiana and Northern Norway and assess them. They then compared those results to those of the machine learning system.

"We found that the computer's AI models can be at least as accurate as clinicians," says Foltz.

Their technology is not commercially available yet. But he and his colleagues envision a day when such AI systems could be in the room with a therapist and a patient to provide additional data-driven insight, or serve as a remote-monitoring system for the severely mentally ill. If the app detected a worrisome change, it could notify the patient's doctor to check in.

"Patients often need to be monitored with frequent clinical interviews by trained professionals to avoid costly emergency care and unfortunate events," says Foltz. " but there are simply not enough clinicians for that."

DISSEMINATION ACTIVITIES: PRESS RELEASES

This issue includes the full press release written and distributed by Strategic Relations to demonstrate the amplified effects of partnering with CU channels to draw attention to research grants, publications, and activities. ICS asked Peter Foltz and Leanne Hirshfield for feedback about their experiences.

ICS: What led you to initially contact me about your research/publication/grant and getting the word out?

LH: PR stories are a great way to spread the word and highlight the work we're doing. And it's a great way to find new potential grad students and new potential collaborators. In addition to websites and publishing papers for our research communities, PR releases are another way to get our work out to a broader audience.

PF: We had a publication coming out in a journal that we though had broad implications around how the public should think about the use of AI in psychiatry. Since the public generally doesn't notice articles in scientific journals, we though that this would be a good way to get the information out to a wider audience.

ICS: Can you describe the process you went through with me and then Lisa to have her write a press release?

LH: I sent you (Yasko) an email saying that I'd received the equipment grant along with a couple of other grants on human-machine teaming research with fNIRS. With the new equipment arriving, I thought it would be a good time to take some pictures and spread the word! You kindly got me in touch with Lisa.

PF: I first discussed the goals of the press release with you. Then I met with Lisa and spent about an hour describing the published work and the history of the research that led to the publication. She read several related articles we had published and then wrote a draft of the press release. She was able to turn the work into a compelling story. We had several chances to review and edit her draft and then worked with her to pick a good day to put out the release. After the release was published, Lisa handled inquiries from the press, including helping schedule interviews.

ICS: What are some benefits that arose because of the press release?

PF: The release generated a lot of news articles as well as TV and radio interviews. This helped identify some new potential colleagues, data sources, and funding avenues.

LH: My only prior experience (since Lisa has not yet done the PR) is when I was a PhD student at Tufts. We put out a press release about being among the first researchers to use fNIRS for Human-Computer Interaction purposes. I was amazed at the number of press articles (Wired Magazine, Boston Herald, etc) that came from the press release. It was a great way to shine a light on the cutting-edge work we were doing. Of course we have websites as labs and we publish papers, but PR releases are another way to get your work out to a broader audience.

ICS: Would you recommend other ICS researchers to contact Lisa and me?

LH: Yes, definitely.
PF: Yes. As researchers, we want people to know about what we do. CU wants to tell the world about the great work happening on campus, and the University has skilled staff who will help get the word out.

Update: As a result of Peter working with the CU Science Writer, Altmetric ranked his paper in the top 5% of all research outputs scored and has generated as of mid-November, 27 news stories, 3 blogs and 10 Tweets. In addition, Newsy TV, Channel 9 News, Colorado Public Radio's Colorado Matters and others have featured interviews and articles.

When Peter was preparing to talk with Strategic Relations and be interviewed by Newsy TV, I asked if he would please mention Institute of Cognitive Science by name as often as possible. Why? Because it is important that we communicate to the larger world, about who we are and what we do. Because Peter mentioned ICS by name at the very start of the press release process, a large number of news outlets' coverage includes our name. In the world of browser search engines and notability, his conscious effort will have a large impact on our web presence.

I also received an email from Peter that read: "...two weeks ago I gave a talk to the Board of Regents and President Kennedy about educational technology where I mentioned ICS as well. Maybe not as good as a press mention for Wikipedia, but helps remind the administration that we exist!"

Thank you, Peter! You are tipping the scales for ICS to be notable enough for a Wikipedia page.

I encourage all our faculty and student researchers to mention Institute of Cognitive Science by name whenever you publish press releases and give interviews.

ICS CERTIFICATES AND PHD COMPLETION

Congratulations

Combined PhD
Tao Lin
Linguistics

Kayla Jane Kohake
Linguistics

Human Language Technology Certificate
Amy Burkhardt
Katrielle Parnes
Elizabeth Sullivan
Samuel Young

ICS Undergraduate Certificate
Samantha Bartolo
Krystal Arnold

NEW ICS CERTIFICATE STUDENTS

Welcome

Combined PhD
We welcome nine new Combined PhD students to the ICS Graduate Program.

Undergraduate Certificate
To date, we welcome five new Undergraduate Certificate students to ICS.

Graduate Certificate and Combined PhD Program and Undergraduate Certificate Program info is found:

www.colorado.edu/ics/graduate-programs

www.colorado.edu/ics/undergraduate-certificate-cognitive-science-overview

GRADUATE STUDENTS RECOGNIZED

Shirley Huang received the American Speech-Language-Hearing Foundation New Century Scholars Doctoral Scholarship. “I am working towards the combined PhD in SLHS and Cognitive Science. In my application, I emphasized the value of interdisciplinary work and specifically pointed out ICS's role in building my career and expanding my research approach.” More about the scholarship>>

Christian Hill, ICS and CS undergraduate student received a Google CS Research Mentorship Program award. The award provides recipients with Google research scientist mentorship ranging from support in conducting and publishing research, career and advanced academic development, to traveling to Google headquarters and a premier CS research conference with other awardees.
More about Christian and his award>>

Congratulations to Sidney D’Mello’s Students:

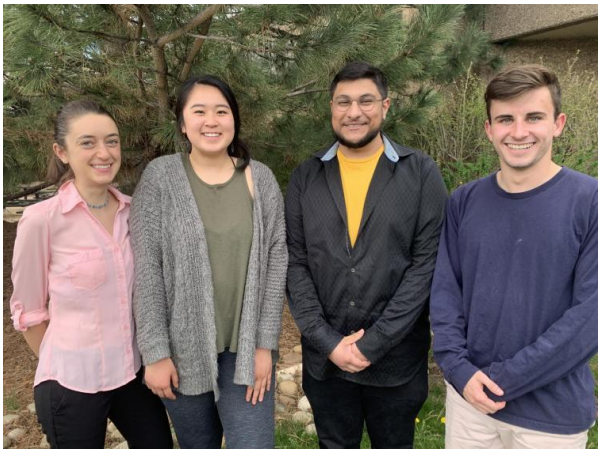
Emily Jensen - 1st place in Computer Science Research Expo
Lucca Eloy, presented by Angela Stewart - Best Student Paper at ICMI 2019
Stephen Hutt - Computer Science Outstanding Service Award
Angela Stewart - SIGCHI Student Travel Grant

Former ICS graduate student Dr. Christopher D’Lauro presented at the ICS colloquium on the topic of concussions in sports and other fields. Christopher received his Ph.D. in 2010, working in the CU Boulder ICS Curran Lab on visual perception and categorization. He is now Associate Professor at the Air Force Academy in Colorado Springs. He spent time with students after the colloquium sharing his perspective on post-PhD job opportunities, work-life balance, and career paths.

UNDERGRADUATE STUDENTS RECOGNIZED

Five CUChange Undergraduates Named BSI, UROP and PACE Student Scholars

CUChange wishes huge congratulations to our five undergraduates who were named either BSI or UROP undergraduates scholars this Spring! The Biological Sciences Initiative (BSI) and the Undergraduate Research Opportunity Program (UROP) both make awards to students to support them in pursuing an independent research project over the course of the Summer or the academic year. We are proud to announce that five of our amazing undergraduates were accepted with their project. (From left to right) Julia Friedman (BSI), Ivy Zhou (UROP), Mohammad Habib (BSI), Benji Morris (UROP) and Jerry Ma (not pictured, UROP).



More about their research>>

STUDENT TRAVEL & RESEARCH AWARDS

By Stephen Sommer, Committee Chair (EDUC)

To encourage student participation in interdisciplinary study and research, the Institute provides funds for ICS students to attend and present at interdisciplinary conferences or to conduct original research.

Distributed three times per year (fall, spring, and summer semesters), ICS Travel and Research Awards are administered by a student committee consisting of one representative from each member department. Each department selects its own method for choosing a student representative. This committee is responsible for announcing the award each semester and allocating available funds.

Students in any member department may apply for funds. Member departments are: Architecture and Planning; Computer Science; Information Science; Integrative Physiology; Linguistics; Philosophy; Psychology and Neuroscience; School of Education; and Speech, Language, Hearing Sciences.

Students can apply for funds whether they are presenting or simply attending an interdisciplinary conference.

Applications for the spring semester will open on January 17 and close on February 7, 2020. Details on the application process is found at ICS website Student Travel & Research Awards page.

Fall 2019 Awardees

For Fall 2019 the ICS Student Travel & Research Awards Committee supported both of the applicants. We encourage more students to apply, as we are eager to support their work!

Shirley Huang (SLHS)

Shirley received $500 to support travel to the American Speech Language Hearing Annual Convention where she will present 2 papers (1-1st author, 1-2nd author) and a research poster (1st author) on her work related to Children's Emotional Language Experience and Cultural Differences.

Janghee Cho (InfoSci)

Janghee received $500 to support material cost and participant compensation for his research related to Technological Interventions for Pro-Environmental Behavior.

New Award Committee

Many thanks to the following students for serving on the Awards Committee.

CS – Alexandra.Gendreau@colorado.edu
LING - Norielle.Adricula@colorado.edu
PHIL – Lisa.thomassmith@colordao.edu
PSYC - Shannon.Mcknight@colorado.edu
SLHS - Carly.Schimmel@colorado.edu

COG SCI RESEARCH PRACTICUM

Every fall, the Institute celebrates and supports the outstanding, interdisciplinary graduate students participating in our Cognitive Science Research Practicum by taking the students and their advisors to breakfast in the Hotel Boulderado. Between when we order our food, and when it arrives, each student stands up and gives the attendees a one-minute overview of their dissertation research.

Students

Chelsea Kendall Chandler
Spencer Dudley
Jennifer Ellis
Cathalina Fontenelle
Alex Gendreau
Layne Hubbard
Ghazaleh Kazeminejad
Ali Raza

Faculty

Ashis Biswas (CU Denver)
McKell Carter
Eliana Colunga (PSYC)
Peter Foltz
June Gruber (PSYC)
Jim Martin
Martha Palmer (LING/CS
Tamara Sumner
Tom Williams (School of Mines)

ICS STUDENT PRESENTATIONS

Adricula, N. and Narasimhan, B. presented a poster at the 44th Boston University Conference on Language Development this past month (Nov. 7-10). It is titled 'Understanding is Understanding by Seeing': Visual Perception Verbs in Child Language. We will also be writing up a proceedings paper for this work.

Chandler, C. presented the poster: Chandler, C., Foltz, P.W., Cheng, J., Bernstein, J.C., Rosenfeld, E.P., Cohen, A.S., Holmlund, T.B. & Elvevåg, B. (2019). Overcoming the bottleneck in traditional assessments of verbal memory: Modeling human ratings and classifying clinical group membership. At the North American Chapter of the Association for Computational Linguistics workshop on Computational Linguistics and Clinical Psychology.

Garneau, N., Nuessle, T., Polman, J., McNamara, P., Swanson, R., & **Hinojosa, L.** (2018, September-October). Organizing Community Science Programs to Benefit Volunteers and Visitors while Advancing Science. Association of Science-Technology Centers (poster). Hartford, CT.

Continued on page 27…

ICS STUDENT PUBLICATION HIGHLIGHTS

Hedayati, H., **Bhaduri, S.,** Sumner, T., Szafir, D., and Gross, M.D. 2019. HugBot: A soft robot designed to give human-like hugs. In Proceedings of the 18th ACM Conference on Interaction Design and Children (IDC '19).

Chandler, C, Foltz, P. W., & Elvevåg, B. (2019). Using Machine Learning in Psychiatry: The Need to Establish a Framework that Nurtures Trustworthiness. Schizophrenia Bulletin.

Chandler, C., Foltz, P.W., Cheng, J., Bernstein, J.C., Rosenfeld, E.P., Cohen, A.S., Holmlund, T.B. & Elvevåg, B. (2019). Overcoming the bottleneck in traditional assessments of verbal memory: Modeling human ratings and classifying clinical group membership. North American Chapter of the Association for Computational Linguistics: Computational Linguistics and Clinical Psychology.

Eloy, L., Stewart, A., Amon, M., Reindhardt, C., Michaels, A., Sun, C., Shute, V., Duran, N., & D'Mello, S. K. Modeling Team-level Multimodal Dynamics during Multiparty Collaboration. Proceedings of the 21st ACM International Conference on Multimodal Interaction (ICMI 2019)

Continued on page 27…

DISSERTATION SPOTLIGHTS

Identity Development, Participation, and Representation in STEM Outreach and Community Science Programs

Lieghanna Hinojosa
Advisor: Joseph L. Polman

Leighanna Hinojosa is interested in the ways learning and identity co-constitute participation in science. Her research looks at informal learning science spaces, such as museums and collaborative outreach programs, and how the environment affords and constrains participants, particularly among those who belong to groups historically underrepresented in Science, Technology, Engineering, and Mathematics (STEM).

Her dissertation explores how individuals participate and enact certain identities within the constraints for their environments during participation in outreach and community science volunteer work using models of apprenticeship with mentorships.

Research findings have implications for the future design of inclusion and outreach programs for museums and other science learning environments. Designing inclusion programs can benefit from using a mentorship component involving individuals from historically underrepresented groups and designing for a welcoming space for students from diverse backgrounds to feel safe, so they may cultivate positive identifications with science.

Leighanna would like to thank her advisor, Joseph L. Polman and committee members Tamara Sumner, Nicole Speer, William Penuel, Susan Jurow, and Kris Gutiérrez for their time and support. Leighanna intends to graduate in May 2020 with a dual PhD in Learning Sciences and Human Development and Cognitive Science.

Institute of Cognitive Science
UNIVERSITY OF COLORADO **BOULDER**

In Praise of Habit

Lisa Thomas-Smith
Advisor: Iskra Fileva

As an empirical matter, most people behave according to the moral norms of their culture, at least most of the time (Pinker, 2001). This does not suffice to establish that people behave morally since cultural norms may not track moral truth; however, it does show that people want to be good. Culture provides a ready standard of measure for whether or not we are behaving well. Culture does not explain how we achieve moral consistency, however. According to popular philosophical views, moral consistency is a result of moral knowledge, moral reflection, and a strong will. In this dissertation, I defend the controversial thesis that the answer is, in fact, "habit."

Due to facts about the human mental faculties such as the possibility of mental fatigue and error, we cannot depend on reflection and will. Further, limited human attentional capability does not allow for constant and consistent focus on moral matters, and research supports the uncomfortable conclusion that we sometimes do not even know our own reasons for behaving as we do. Therefore, the behavioral consistency we observe requires an explanation beyond knowledge and moral commitment. I contend that given normal cognitive limitations, habituation provides the best explanation of observed consistency.

The dissertation is organized into five chapters which address habit's role in decision making, the kinds of habit required for consistent moral practice, the effect of culture on habit and vice versa, the role of habitual attitudes in social and political debate, and the implications of my theory on our current theories, practices, and attitudes about moral behavior.

Lisa would like to thank her advisor, Iskra Fileva and committee members Tamara Sumner, Ajume Wingo, and Robert Rupert for their time and support. Lisa has received as dissertation completion fellowship for Spring semester and intends to graduate in May, 2020 with a dual PhD in Philosophy and Cognitive Science.

NEW ICS GRANTS AWARDED

Below are grants awarded with associated Indirect Cost Recovery to ICS

PI Name (CAPS) ICS Faculty (BOLD)	**Sponsor**	**Title of Project**	**# of Yrs**	**Total Award**
BANICH Hewitt	NIH-San Diego	Supplement for ABCD-USA Consortium: Twin Research Project	1	$55,792
BRYAN **Bidwell** Hutchison	NIH	Exploring the Anti-inflammatory properties of Cannabis and their Relevance to Insulin Sensitivity	5	$2,762,097
CARSTON	DOD-eCortex	Capturing the Power and Pitfalls of Human Decision-Making	3	$269,904
CEKO	Cognifisense	Cognifisense Rapid Prototyping Study	1	$36,404
CEKO	NIH-Cognifisense	Using Virtual Reality Psychological Therapy to Develop a Non-Opioid Chronic Pain Therapy	0.5	$17,658
D'MELLO	IARPA-Notre Dame	Additional Funding and Extension A Comprehensive Approach to Modeling Job Performance via Unobtrusive, Continuous, Multimodal Sensing	0.42	$56,028
D'MELLO	Mind Scholar Network-NVF	Analytic and Computational Approaches to Uncover Teacher Practices that Foster Positive Identity and Equity in Engagement and Learning for Middle School Math Students	1.5	$69,599
D'MELLO Hirshfield	NSF	Modeling Brain and Behavior to Uncover the Eye-Brain-Mind Link during Complex Learning	3	$691,498
D'MELLO	NSF	AI-DCL: Understanding and Alleviating Potential Biases in Large Scale Employee Selection Systems: The Case of Automated Video Interviews	2	$144,994
D'MELLO	NSF	Intelligent Facilitation for Teams of the Future via Longitudinal Sensing in Context	3	$338,144
EISENBERG Gross	NSF	REU SUPPLEMENT for Collaborative Research: Debugging By Design: Developing a Toolset for Debugging with Electronic Textiles to Promote Computational and Engineering Thinking in High School	0.75	$18,700
FARRELL **Penuel**	William T. Grant Foundation	Measuring the Effectiveness of Research-practice Partnerships in Education	2	$635,337
GILLEY **Yoshinaga-Itano**	Dept of Ed - Gallaudet Univ	Rehabilitation Engineering Research Center on Improving the Accessibility, Usability and Performance of Technology for Individuals who are Deaf and Hard of Hearing	5	$712,814

HIRSHFIELD D'Mello	AFOSR	A Wearable Cognitive, Physiological and Behavioral Sensor Suite for Testing and Evaluation of Human-Machine Teaming Environment	1	$505,165
HIRSHFIELD	AFRL-GDIT	SA_TAHMT Task Order 33	1	$64,000
HIRSHFIELD D'Mello	ARO	Development and Empirical Evaluation of a Theoretical Framework for Integrating Adaptive Multimodal Processes to Optimize Outcomes of Human-Agent Teams	3	$616,000
HIRSHFIELD	DOD-Syracuse	Development of a Remote-fNIRS Device for use Under Naturalistic Working Conditions	2	$37,569
HIRSHFIELD	NAVY-Aptima	Tools for Objective Measurement and Evaluation (TOME II)	2	$165,000
HIRSHFIELD	NSF-School of Mines	CHS: SMALL: APERTURE: Augmented Reality and Physio-Enhanced Robotic Gesture	3	$241,000
HIRSHFIELD	NSF-Syracuse	Improved Cross-Subject Cognitive and Emotional State Classification Using Functional Near-Infrared Spectroscopy Data for Deep Learning	2	$243,138
MISHRA **Martin**	Lockheed Martin	Competitive Intelligence and Position to Win project (CI/PTW)	1	$30,000
PALMER **Martin**	NIH-Boston Children's Hospital	Temporal Relation Discovery for Clinical Text (Renewal)	4	$727,678
PALMER		RESIN: Reasoning about Event Schemas for Induction of Knowledge	4.5	$675,006
SEDEY	NIH-UCD	Universal Newborn Hearing Screening and Intervention	1	$11,000
VAN VUUREN	NIH-Shirley Ability Lab	Modulating Stimuli Intensity to Improve Clinical Outcomes in Aphasia Treatment	5	$1,469,012
WARD	NSF	EAGER: Comprehension Assessment via Spoken Dialogue	1	$150,000
YOSHINAGA-ITANO Gilley	CDC-Univ of South Carolina	Economic Outcomes of EHDI	1	$138,375
Non Grant Funds				
PENUEL	Rapides Parish School District	SA_Rapides Parish Professional Development Service Agreement	0.5	$24,277
SUMNER Penuel	Denver Public School District	SA_Inquiry Hub Professional Development - Basic Plan	7	$357,823

VISIT THE ICS WEBSITE FOR NEWS

For information on special events, colloquia, and research updates & news, visit:

www.colorado.edu/ics

ICS PUBLICATIONS Cont.

Hansen*, N.S., Feldstein Ewing, S.W., Gillman*, A., & **Bryan, A.D.** (forthcoming). Feeling Hot Hot Hot: The Interplay of Affect, Health, and Sexual Behavior. In Williams, D, Rhodes, R, & Conner, M. (Eds.) Affective Determinants of Health Behavior. Oxford, UK: Oxford University Press.

Robinson-Papp, J., Aberg, J., Benn, E., **Bryan, A.**, Cedillo, G., Chikamoto, Y., George, M.C., Horn, B., Kamler, A., Navis, A., Nmashie, A., Scherer, M., Starkweather, A., Vickrey, B., Weiss, L., Yang, Q., & Fisher, J. (2019). Decreasing risk among HIV patients on opioid therapy for chronic pain: Development of the TOWER Intervention for HIV Care Providers. Contemporary Clinical Trials Communications, https://doi.org/10.1016/j.conctc.2019.100468.

Thayer, R.E., Hansen, N.S., Prashad, S., Karoly, H., Filbey, F.M., **Bryan, A.D.**, & Feldstein Ewing, S.W. (in press). Recent tobacco use has widespread associations with adolescent white matter microstructure. Addictive Behaviors.

Yeater, E.A., Treat, T.A., Viken, R.J., & **Bryan, A.D.** (in press). Risk processing and college women's risk for sexual victimization. Psychology of Violence.

Aslan, S., Alyuz, N., Tanriover, C., Mete, S. E., Okur, E., **D'Mello, S. K.**, et al. (2019). Investigating the Impact of a Real-time, Multimodal Student Engagement Analytics Technology in Authentic Classrooms. Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019).

D'Mello, S. K. (in press). What do we Think About When we Learn? In K. Millis, J. Magliano, D. Long & K. Wiemer (Eds.), Understanding Deep Learning, Educational Technologies and Deep Learning, and Assessing Deep Learning: Routledge/Taylor and Francis.

D'Mello, S. K., Stewart, A., Amon, M., Sun, C., Duran N., & Shute, V. (2019). Towards Dynamic Intelligent Support for Collaborative Problem Solving. Approaches and Challenges in Team Tutoring Workshop at the 20th International Conference on Artificial Intelligence in Education (AIED'19).

Eloy, L., Stewart, A., Amon, M., Reindhardt, C., Michaels, A., Sun, C., Shute, V., Duran, N., & **D'Mello, S. K**. Modeling Team-level Multimodal Dynamics during Multiparty Collaboration. Proceedings of the 21st ACM International Conference on Multimodal Interaction (ICMI 2019)

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UPCOMING ACTIVITIES: Students

Applications for the
Spring 2020 ICS Student Travel & Research Awards
Opens January 17 and closes on February 7

Find details on how to apply on the ICS website Student Travel & Research Awards page.

Applications for the ICS Student Travel and Research Awards are available to ICS student members through any of the committee members, the ICS office (Muenzinger D418), or at the above link.

Contact Stephen Sommer **Stephen.sommer@colorado.edu** chair of the Student Award Committee for more information.

UPCOMING ACTIVITIES: FOR ALL

Save the Date for 2020 Brain Awareness Week Events!

- March 12: Understanding the Teen Brain Talk @ Meadows Library
- March 13: Community Brain Expo Day @ CINC
- March 16: Can Computers Read our Emotions Talk @ DLC Engineering
- March 16: CU Student Mental Health Hike @ Chautauqua Ranger Station
- March 18: CU Student Brain Health Fair @ the UMC
- March 19: Inflammation, Stress, and Your Brain @ East Senior Center

Event detail are available @: Tinyurl.com/CUBAWEvents2020

FACULTY PUBs Cont.

Galla, B. M., Shulman, E. P., Plummer, B. D., Gardner, M., Hutt, S. J., Goyer, J. P., Finn, A. S., **D'Mello, S. K**., & Duckworth, A. L. (in press). Why high school grades are better predictors of on-time college graduation than are admissions test scores: The role of self-regulation and cognitive ability. American Educational Research Journal.

Huggins-Manley, A., Beal, C., **D'Mello, S. K.**, Leite, W., & Cetin-Berber, D., Kim., D., & McNamara, D. A Commentary on Construct Validity when using Operational Virtual Learning Environment Data in Effectiveness Studies, Journal of Educational Effectiveness.

Hutt, S., Gardner, M., Duckworth, A., & **D'Mello, S. K.** (2019). Evaluating Fairness and Generalizability in Models Predicting On-Time Graduation from College Applications.

Hutt, S., Krasich, K., Mills, C. Bosch, N., White, S., Brockmole, J., & **D'Mello, S. K.** (2019). Automated gaze-based mind wandering detection during computerized learning in classrooms. User Modeling & User-Adapted Interaction, 29(4).

Jensen, E., Hutt, S., & **D'Mello, S. K.** (2019). Generalizability of Sensor-Free Affect Detection Models in a Longitudinal Dataset of Tens of Thousands of Students. Proceedings of the 12th International Conference on Educational Data Mining (EDM 2019). International Educational Data Mining Society.

Meindl, P., Yu, A., Galla, B., Quirk, A., Haeck, C., Goyer, P., Lejuez, C., **D'Mello, S. K.**, & Duckworth, A. (in press). No Pain, No Gain: A Brief Behavioral Measure of Frustration Tolerance Predicts Academic Achievement Two Years Later. Emotion.

Mills, C., Bosch, N., Krasich, K., & **D'Mello, S. K.** (2019). Reducing Mind-Wandering during Vicarious Learning from an Intelligent Tutoring System. Proceedings of the 20th International Conference on Artificial Intelligence in Education (AIED'19). Springer.

Mirjafari, S., Masaba, K., Grover, T., Wang, W., Audia, P., Campbell, A. T., Chawla, N. V., Swain, V. D., Choudhury, M. D., Dey, A. K., **D'Mello, S. K.**, Gao, G., Gregg, J. M., Jagannath, K., Jiang, K., Lin, S., Liu, Q., Mark, G., Martinez, G. J., Mattingly, S. M., Moskal, E., Mulukutla, R., Nepal, S., Nies, K., Reddy, M. D., Robles-Granda, P., Saha, K., Sirigiri, A., & Striegel, A. (2019). Differentiating Higher and Lower Job Performers in the Workplace Using Mobile Sensing. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 3(2).

Continued on page 22…

FACULTY PRESENTs Cont.

Chandler, C presented the poster: **Chandler, C., Foltz, P.W.**, Cheng, J., Bernstein, J.C., Rosenfeld, E.P., Cohen, A.S., Holmlund, T.B. & **Elvevåg, B.** (2019). Overcoming the bottleneck in traditional assessments of verbal memory: Modeling human ratings and classifying clinical group membership. At the North American Chapter of the Association for Computational Linguistics workshop on Computational Linguistics and Clinical Psychology.

Foltz, P. gave a talk on Technology in Higher Education at the Educational Writer's Association Fall meeting at the University of Michigan

Foltz, P. presented a talk on Best Practices around Automated Scoring at the National Council for Measurement in Education Annual meeting in Toronto, April.

Foltz, P. presented a talk titled Artificial Intelligence in Education: Present and Future to the CU Board of Regents in November. He then hosted a roundtable discussion on the topic with Regents and members of the administration.

Foltz, P. presented on a panel on Advancing the Measurement Field with Data Science at the National Council for Measurement in Education Annual meeting in Toronto, April.

Healy, A. F. (2019, May). Discussion of Logan (2019), "Serial Order in Perception, Cognition, and Action." Invited paper presented at the 15th Context and Episodic Memory Symposium (CEMS), Philadelphia, PA.

Healy, A. F., Kole, J. A., Schneider, V. I., & Barshi, I. (2019, November). Training, retention, and transfer of data entry perceptual and motor processes over short and long retention intervals. Paper presented at the 60th Annual Meeting of the Psychonomic Society, Montreal, Canada.

Tao, L. & Healy, A. F. (2019, November). Function word restoration. Paper presented at the 60th Annual Meeting of the Psychonomic Society, Montreal, Canada.

Vrzakova, H. presented at CHI 2019 in Glasgow, Scotland

Yoshinaga-Itano, C. (2019). Autism and Children who are deaf or hard of hearing. En Voz Alta Symposium, October 25, 2019.

Yoshinaga-Itano, C. (2019). Parent Tip Sheets: Literacy, Cognitive, Social-Emotional, Phonology, Semantics, Syntax/Morphology, Pragmatics, Visual Language. Hands & Voices tele-presentation, October 24, 2019.

Continued on page 22…

FACULTY PUBs Cont.

Saha, K., Bayraktaroglu, A. E., Campbell, A. T., Chawla, N. V., Choudhury, M. D., **D'Mello, S. K.**, Dey, A. K., Gao, G., Gregg, J. M., Jagannath, K., Mark, G., Martinez, G. J., Mattingly, S. M., Moskal, E., Sirigiri, A., Striegel, A., & Yoo, D. W. (2019). Social Media as a Passive Sensor in Longitudinal Studies of Human Behavior and Wellbeing. Case Study at the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019).

Stewart, A., Vrzakova, H., Sun, C., Yonehiro, J. , Stone, C., Duran, N., Shute, V., & **D'Mello, S. K.** (in press). I Say, You Say, We Say: Using Spoken Language to Model Socio-Cognitive Processes during Computer-Supported Collaborative Problem Solving. Proceedings of the ACM: Human Computer Interaction. 3, Computer Supported Collaborative Work (CSCW 2019).

Stone, C., Donnelly, P., Dale, M., Capello, S., Kelly, S., Godley, A., & **D'Mello, S. K.** (2019). Utterance-level Modeling of Indicators of Engaging Classroom Discourse. Proceedings of the 12th International Conference on Educational Data Mining (EDM 2019). International Educational Data Mining Society.

Behrens, J. T., DiCerbo, K. E., & **Foltz, P. W.** (2019). Assessment of Complex Performances in Digital Environments. The ANNALS of the American Academy of Political and Social Science, 683(1), 217–232.

FACULTY PRESENTs Cont.

Yoshinaga-Itano, C. (2019). Early Intervention Challenges and Strategies for Addressing the Needs of Families and Children who are Deaf or Hard of Hearing from Diverse Cultural and Linguistic Backgrounds 7th Annual Tom Davidson Memorial Conference, Knoxville TN.

Yoshinaga-Itano, C. (2019). Serving culturally and linguistically diverse populations of families with children who are deaf or hard of hearing. SASLHA South African Speech Language Hearing Association, Cape Town, SA, October 3, 2019.

Yoshinaga-Itano, C. (2019). Language outcomes and predictors of children with Hearing Loss: Focusing on children with the greatest risk. SASLHA South African Speech Language Hearing Association, Cape Town, SA, October 4, 2019.

Yoshinaga-Itano, C. (2019). Children with hearing loss and autism. SASLHA South African Speech Language Hearing Association, Cape Town, SA, October 5, 2019.

Yoshinaga-Itano, C. (2019). Master Lecture: Title - Focusing on What's Most Important: Is the level of maternal education a proxy for the relationship of parent talk and language outcomes of children who are deaf or hard of hearing? International Society of Early Intervention, Sydney, NSW, Australia, June 26, 2019.

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ICS FELLOWS PRESENTATIONS Cont.

Kilpatrick, Z. (9/2019) Accumulating evidence across multiple timescales presented at Collaborative Research in Computational Neuroscience Principal Investigators Meeting, Austin, Texas.

Kilpatrick, Z. (5/2019) Evidence accumulation within and across trials presented at Neuroethology of Movement and Motor Control: Banff International Research Station Workshop, Banff, Alberta, Canada.

Kilpatrick, Z. (6/2019) Stochastic and dynamical models of evidence integration and storage presented at International Conference on Mathematical Neuroscience: Tutorial Talks (2), Copenhagen, Denmark.

Brown, S.W., Bonn, J., Gung, J., Zaenen, A., Pustejovsky, J., and **Palmer, M.** VerbNet Representations: Subevent Semantics for Transfer Verbs, In the Proceedings of the 1st Designing Meaning Representations Workshop, DMR-2019, held with ACL, Florence, Italy, August 1, 2019

Chiu, B., Baker, S., **Palmer, M.**, Korhonen, A., Enhancing biomedical word embeddings by retrofitting to verb clusters, In the Proceedings of the 18th BioNLP Workshop and Shared Task, held with ACL, Florence, Italy, August 1, 2019.

Myers, S. and **Palmer, M.** ClearTAC: Verb Tense, Aspect, and Form Classification Using Neural Nets, In the Proceedings of the 1st Designing Meaning Representations Workshop, DMR-2019, held with ACL, Florence, Italy, August 1, 2019.

Tan, C. (5/2019) What Makes a Good Team? A Large-scale Study on the Effect of Team Composition in Online Gaming presented at the Web conference (WWW'2019)

Tan, C. (5/2019) Are All Successful Communities Alike? Characterizing and Predicting the Success of Online Communities, presented at the Web conference (WWW'2019)

Lai, V. and **Tan, C.** (2019). On Human Predictions with Explanations and Predictions of Machine Learning Models: A Case Study on Deception Detection. Paper presented at FAT (online demo at https://deception.machine the loop.com.)

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FACULTY PUBs Cont.

Behrens, J. T., DiCerbo, K. E., & **Foltz, P. W.** (2019). Assessment of Complex Performances in Digital Environments. The ANNALS of the American Academy of Political and Social Science, 683(1), 217–232.

Chandler, C., **Foltz, P. W.**, & Elvevåg, B. (2019). Using Machine Learning in Psychiatry: The Need to Establish a Framework that Nurtures Trustworthiness. Schizophrenia Bulletin.

Chandler, C., **Foltz, P.W.**, Cheng, J., Bernstein, J.C., Rosenfeld, E.P., Cohen, A.S., Holmlund, T.B. & Elvevåg, B. (2019). Overcoming the bottleneck in traditional assessments of verbal memory: Modeling human ratings and classifying clinical group membership. North American Chapter of the Association for Computational Linguistics: Computational Linguistics and Clinical Psychology.

Cohen, A.S., Cox, C., Tucker, R., Mitchell, K.R., Schwartz, E.K., Le, T., **Foltz, P.W.**, Holmlund, T.B. & Elvevåg, B. (2019). Validating digital phenotyping technologies for clinical use: the critical importance of "resolution". World Psychiatry.

Cohen, A.S., Fedechko, T.L., Schwartz, E.K., Le, T.P., **Foltz, P.W.**, Bernstein, J., Cheng, J., Holmlund, T.B. & Elvevåg, B. (2019). Psychiatric risk assessment from the clinician's perspective: Lessons for the future. Community Mental Health Journal. https://doi.org/10.1007/s10597-019-00411-x

Continued on page 24…

FACULTY PRESENTs Cont.

Yoshinaga-Itano, C. (2019). If the World Were a 100 People. Multicultural Self-Literacy Audit. How Does Culture Impact Early Intervention Services. Acoustics of Native Languages. Multicultural Aspects of Deafness. Culturally and Linguistically Diverse Populations Workshop. Kelston School for the Deaf, June 24, 25, 2019

Yoshinaga-Itano, C. (2019). Leadership Roles of Deaf/Hard of Hearing Professionals in Early Intervention. Deafness and Autism. Workshop for Teachers of the Deaf in Queensland, June 27, 2019.

Yoshinaga-Itano, C. (2019). If the World were a Village of a 100 People. Differential language development trajectories of children with hearing loss. Using LENA to document and measure growth of daily spoken language environment for children from diverse language backgrounds. Overcoming impact of maternal level of education. Screening for additional disabilities. Assessing acoustics of language/learning environments. Audiological and Early Intervention changes due to cultural and linguistic differences. Impact of culture, religion, socioeconomics on attitudes toward hearing aids, cochlear implants, education, medical access, compliance, ability to partner. Use of Interpreters. Impact of native language on amplification fit and auditory development. Transition from home language to English. Adelaide, South Australia Department of Education, Early Years and Child Development workshop, June 29-30, 2019

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ICS FELLOWS PRESENTATIONS Cont.

Tan, C. (6/2019) No Permanent Friends or Enemies: Tracking Relationships Between Nations from News. Paper presented at the 2019 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL'2019, Minneapolis, MN)

Cole, J., & **Van Boven, L.** (2019). Social norms and political leader influence on climate policy support. Paper presented at Behavior, Energy, and Climate Change, Sacramento, CA.

Cole, J., **Van Boven, L.**, Ehret, P., & Sherman, D. (2019). The dominating influence of social norms in climate policy support. Paper presented at Association for Psychological Science, Washington, DC.

Mrkva, K., & **Van Boven, L.** (2019). Salience theory of mere exposure effects: Relative exposure influences judgment and choice. Paper presented at Society for Judgment and Decision Making, Montreal, Canada.

Pomerance, J., & **Van Boven, L.** (2019). Party over product:The exaggerated use of political cues in apolitical decisions for others. Poster presented at Society for Judgment and Decision Making, Montreal, Canada.

Ramos, J., Mrkva, K., & **Van Boven, L.** (2019). Orienting visual attention towards future rewards reduces temporal discounting. Poster presented at Society for Judgment and Decision Making, Montreal, Canada.

Van Boven, L., Cole., J., Ehret, P., & Sherman, D. K. (2019). Party over planet: The dominance of peer partisanship in evaluating climate policy. Paper presented at symposium chaired by Leaf Van Boven, "Partisan Psychological Barriers to Addressing Climate Change," International Conference of Psychological Scientists, Paris, France.

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FACULTY PUBs Cont.

Hellman, S., Rosenstein, M., Gorman, A., Murray, W., Becker, L., Baikadi, A., Budden, J., & **Foltz, P. W.** (2019). Scaling Up Writing in the Curriculum: Batch Mode Active Learning for Automated Essay Scoring. In Proceedings of the Sixth ACM conference on Learning@Scale. Chicago, IL. June 2019.

Le, T.P., Cowan, T., Schwartz, E.K., Elvevåg, B., Holmlund, T.B., **Foltz, P.W.**, Barkus, E., & Cohen, A.S. (2019). The importance of loneliness in psychotic-like symptoms: Data from three studies. Psychiatry Research.

Mattingly, S. M., **Gregg, J.**, Audia, P., Baytaktaroglu, E., Campbell, A., Chawla, N., Swain, V. D., Choudhury, M. D., D'Mello, S. K., Dey, A. K., Gao, G., Jagannath, K., Jiang, K., Lin, S., Liu, Q., Mark, G., Martinez, G., Masaba, K., Mirjafari, S., Moskal, E., Mulukutla, R., Nies, K., Reddy, M., Robles, P., Saha, K., Sirigiri, A., & Striegel, A. (2019). The Tesserae Project: Experiences with Large-Scale, Longitudinal, In Situ, Multimodal Sensing of Information Workers. Case Study at the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019).

Buck-Gengler, C. J., & **Healy, A. F.** (2019). A viable option for dictionary pronunciation guides. *American Journal of Psychology, 132,* 205-226.

Corral, D., **Healy, A. F.**, Rozbruch, E. V., & Jones, M. (2019). Building a testing-based training paradigm from cognitive psychology principles. Scholarship of Teaching and Learning in Psychology, 5, 189-208.

Healy, A. F., Kole, J. A., Schneider, V. I., & Barshi, I. (2019). Training, retention, and transfer of data entry perceptual and motor processes over short and long retention intervals. Memory & Cognition, 47, 1606-1618.5

Hoover, J. D., & **Healy, A. F.** (2019). The bat-and-ball problem: Stronger evidence in support of a conscious error process. Decision, 6, 369-380.

Young, A. P., **Healy, A. F.**, Jones, M., & Bourne, L. E., Jr. (2019). Verbal and spatial acquisition as a function of distributed practice and code-specific interference. Memory & Cognition, 47, 779-791.

Hutchison, K.E., Hagerty S.*, Galinkin, J., Bryan, A, & Bidwell, L.C. (2019). Cannabinoids, Pain, and Opioid Use Reduction: The Importance of Distilling and Disseminating Existing Data. Cannabis and Cannabinoid Research.

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FACULTY PRESENTs Cont.

Yoshinaga-Itano, C. (2019). If the World were a Village of a 100 People. Differential language development trajectories of children with hearing loss. Using LENA to document and measure growth of daily spoken language environment for children from diverse language backgrounds. Overcoming impact of maternal level of education. Screening for additional disabilities. Assessing acoustics of language/learning environments. Audiological and Early Intervention changes due to cultural and linguistic differences. Impact of culture, religion, socio-economics on attitudes toward hearing aids, cochlear implants, education, medical access, compliance, ability to partner. Use of Interpreters. Impact of native language on amplification fit and auditory development. Royal Institute for Deaf and Blind Children, Sydney, New South Wales, Australia, July 4-5, 2019

Yoshinaga-Itano, C. (2019). A Look into the Crystal Ball for Children Who are Deaf or Hard of Hearing: Needs, Opportunities, and Challenges. International Association of Logopedics and Phoniatrics, Taipei, Taiwan, August 21, 2019

Yoshinaga-Itano, C. (2019). A Look into the Crystal Ball for Children Who are Deaf or Hard of Hearing: Needs, Opportunities, and Challenges. International Association of Logopedics and Phoniatrics, Taipei, Taiwan, August 21, 2019

Yoshinaga-Itano, C. (2019). Validating hearing aid fitting and mapping cochlear implants with the speech acoustics of the native language. International Association of Logopedics and Phoniatrics, Taipei, Taiwan August 19, 2019

Yoshinaga-Itano, C. (2019). Speech takes a piggyback on sign language. Parent workshop. Taipei, Taiwan, August 23, 2019

Yoshinaga-Itano, C. (2019). FCEI & JCIH principles of early intervention for children who are deaf or hard of hearing. Lanzhou Rehabilitation Center, Lanzhou, Gansu Province, China, June 14-15, 2019

Yoshinaga-Itano, C. (2019). Auditory Skill Development in infancy/toddler/early childhood. Lanzhou Rehabilitation Center, Lanzhou, Gansu Province, China, June 14-15, 2019

Yoshinaga-Itano, C. (2019). The importance of early identification, early audiologic diagnosis and hearing aid fitting and early intervention services 1-3-6. Lanzhou Rehabilitation Center, Lanzhou, Gansu Province, China, June 14-15, 2019

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FACULTY PUBs Cont.

Hutchison, K.E., Bidwell. L.C., Ellingson, J.M., & Bryan, A.D. (2019). Cannabis & Health Research: Rapid Progress Requires Innovative Research Designs. Value in Health.

Thayer*, R.E., YorkWilliams*, S.L., **Hutchison, K.E.**, & Bryan, A.D. (2019). Preliminary results from a pilot study examining brain structure in older adult cannabis users and nonusers. Psychiatry Research: Neuroimaging, 285, 58-63.

Gendreau Chakarov, A., Recker, M., **Jacobs, J**., Van Horne, K., & Sumner, T. (2019, February). Designing a Middle School Science Curriculum that Integrates Computational Thinking and Sensor Technology. In Proceedings of the 50th ACM Technical Symposium on Computer Science Education (pp. 818-824). ACM.

Gendreau Chakarov, A., Biddy, Q., Recker, M., **Jacobs, J.**, Sumner, T., Hervey, S., Van Horne, K., & Penuel, W. (2019) Designing and implementing sensor-based science units that incorporate computational thinking. Research Presentation at AERA International Conference 2019: Leveraging Education Research in a Post Truth Era: Multimodal Narratives to Democratize Evidence. Toronto, Canada: AERA.

Jones, M. (2019). Relating causal and probabilistic approaches to contextuality. Philosophical Transactions of the Royal Society A, 377, 20190133. https://royalsocietypublishing.org/doi/pdf/10.1098/rsta.2019.0133

Kilpatrick, Z.P., Holmes, W.R., Eissa, T.L., and Josić, K.. Optimal models of decision-making in dynamic environments. Curr. Opin. Neurobiol. 58 (2019) pp. 54–60.5

Radillo, A.E., Veliz-Cuba, A., Josić, K., and **Kilpatrick, Z. P**. Performance of normative and approximate evidence accumulation on the dynamic clicks task. Neurons, Behavior, Data analysis, and Theory (2019) 10226.

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FACULTY PRESENTs Cont.

Yoshinaga-Itano, C. (2019). The importance of early identification, early audiologic diagnosis and hearing aid fitting and early intervention services 1-3-6. Lanzhou Rehabilitation Center, Lanzhou, Gansu Province, China, June 14-15, 2019.

Yoshinaga-itano, C. (2019). Children with Hearing Loss and Additional Disabilities (identifying autism and other additional disabilities early). Lanzhou Rehabilitation Center, Lanzhou, Gansu Province, China June 14-15, 2019.

Yoshinaga-Itano, C. (2019). Predictors of outcomes of our at-risk populations of children with hearing loss: low SES, non-English speaking and multiply disabled. Massachusetts Early Intervention Summit, June 19, 2019.

Yoshinaga-Itano, C. (2019). At-risk populations of children with hearing loss: low MLE, non-English speaking and multiple disabled. Frontiers in Hearing, Estes Park, CO. July 15, 2019.

Yoshinaga-Itano, C. (2019). Language outcomes and children with hearing loss. 60th Annual Missouri Speech and Hearing Association Convention, Tan-Tar-A, Osage Beach, Missouri April 6, 2019.

Yoshinaga-Itano, C. (2019). Language outcomes of children with hearing loss from diverse language backgrounds. 60th Annual Missouri Speech and Hearing Association Convention. Tan-Tar-A, Osage Beach, Missouri April 6, 2019.

Yoshinaga-Itano, C. (2019). Predictors and outcomes of our at-risk populations of children with hearing loss: low SES, non-English-speaking, multiply disabled. Judith S. Gravel Memorial Lecture, Vanderbilt University, Nashville, Tennessee, March 15, 2019.

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FACULTY PUBs Cont.

Martin-Willett R.*, Helmuth T., Bryan, A.D., Abraha, M.*, Lee, K., Hitchcock, L.N.*, Bidwell, L.C.(2019) Validation of a multisubstance online timeline follow back assessment. Brain and Behavior.

Martin-Willett, R.*, McCormick, Z., Newman, W.*, Torres Ortiz, M.*, Larsen, L., Bidwell, L.C. (2019). The transformation of a gold standard in-person substance use assessment to a web-based, REDCap integrated data capture tool. Journal of Biomedical Informatics.

Chiu, B., Majewska, O., Pyysalo, S., Wey, L., Stenius, U., Korhonen, A., **Palmer, M.** A Neural Classification Method for Supporting the Creation of BioVerbNet, Journal of Biomedical Semantics, (2019) 10:2, JBSM-D-18-00035, January, 2019.

Kalouli, A. L., Buis, A., Real, L., **Palmer, M.,** and dePaiva, V. Explaining Simple Natural Language Inference, in the Proceedings of the 13th Linguistic Annotation Workshop, LAW 2019, held with ACL 2019, Florence, Italy, Aug 1, 2019.

Davidson, K.L. & **Penuel, W.R.** (2019). How brokers negotiate joint work at the boundaries. In J. Malin, & C. Brown (Eds.), The role of knowledge brokers in education: Connecting the dots between research and practice (pp. 154-167). New York, NY: Routledge.

Penuel, W. R. (2019). Co-Design as infrastructuring with attention to power: Building collective capacity for equitable teaching and learning through Design-Based Implementation Research. In J. M. Pieters, J. M. Voogt, & N. N. P. Roblin (Eds.), Collaborative curriculum design for sustainable innovation and teacher learning (pp. 387-401). Dordrecht, the Netherlands: Springer.

Penuel, W. R. & Hill, H. C. (in press). Building a knowledge base on research-practice partnerships: Introduction to the special topic collection. AERA Open. [Heather and I were co-editors of the whole collection]

Penuel, W. R., Turner, M. L., Jacobs, J. K., Van Horne, K., & Sumner, T. (2019). Developing tasks to assess phenomenon-based science learning: Challenges and lessons learned from building proximal transfer tasks. Science Education, 103 (6), 1367-1395.

Raza, A., **Penuel, W. R.**, Jacobs, J., & Sumner, T. (in press). Supporting equity in schools: Using visual learning analytics to understand students' classroom experiences. In M. Schmidt, A. Tawfik, Y. Earnshaw, & I. Jahnke (Eds.), Learner and user experience research: An introduction for the field of learning design & technology: Edtechbooks.

Quigley, D., Caccamise, D., Weatherley, J., Foltz, P. "Exploring Video Engagement in an Intelligent Tutoring System" has been accepted to HCI International 2020: http://2020.hci.international/

Spann, C., Shute, V. J. Rahimi, S., & **D'Mello, S. K.** (2019) The Productive Role of Cognitive Reappraisal in Regulating Affect during Game-Based Learning. Computers in Human Behavior, 100, 358-369.

Hedayati, H., Bhaduri, S., **Sumner, T.**, Szafir, D.A. and Gross, M.D. 2019. HugBot: A soft robot designed to give human-like hugs. In Proceedings of the 18th ACM Conference on Interaction Design and Children (IDC '19).

Recker, M., **Sumner, T.**, Penuel, W., Gendreau Chakarov, A., Jacobs, J., Biddy, Q., (2019). Evidence Sharing: Designing Middle School Science Storylines Integrating Sensor Technologies and Data-Driven Science. Research Presentation at Data session at NSF STEM+C Co-PI meeting. Alexandria, VA: NSF.

Sumner, T., Penuel, W., Gendreau Chakarov, A., Jacobs, J., Biddy, Q., Recker, M., (2019). Evidence Sharing: Designing Middle School Science Storylines Integrating Sensor Technologies and Data-Driven Science in the Context of a Research-Practice Partnership. Research Presentation at Middle School session at NSF STEM+C Co-PI meeting. Alexandria, VA: NSF.

Sumner, T., Penuel, W., Recker, M., Hervey, S., Olezene, S., Landsman, S., (2019) Supporting the Integration of Computational Thinking into Middle School Science through Curriculum and Professional Development. Poster Presentation at NSF STEM+C Co-PI meeting. Alexandria, VA: NSF.

Muthukrishnan, H. and **Szafir, D.A.** "Using Machine Learning and Visualization for Qualitative Inductive Analyses of Big Data." Machine Learning from User Interfaces (MLUI) Workshop at IEEE VIS 2019. Paper: https://cmci.colorado.edu/visualab/papers/MLUI_Vis19_revised.pdf.

Smart, S., Wu, K., & **Szafir, D.A.**. "Color Crafting: Automating the Construction of Designer Quality Color Ramps." Transactions on Visualization & Computer Graphics, 2020. Part of the Proceedings of IEEE VIS 2019. Paper: https://arxiv.org/pdf/1908.00629.pdf Project Page: https://cmci.colorado.edu/visualab/ColorCrafting/

Whitlock, M., Wu, K., & **Szafir, D.A.** "Designing for Mobile and Immersive Visual Analytics in the Field." Transactions on Visualization & Computer Graphics, 2020. Part of the Proceedings of IEEE VIS 2019.

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FACULTY PUBs Cont.

Wu, K., Tanis, S., and **Szafir, D.A.** "Designing Communicative Visualization for People with Intellectual Developmental Disabilities." VisComm Workshop at IEEE VIS 2019. Paper: https://osf.io/zbjhr

Bhandari, S., Hallowell, M. R., **Van Boven, L.**, Welker, K., & Gruber, J. (in press). Using augmented virtuality to examine how emotions influence construction hazard identification, risk assessment, and safety decisions. Journal of Construction Engineering and Management.

Vrzakova, H., Amon, M. J., Stewart, A., & D'Mello, S. K. (2019). Dynamics of Visual Attention in Multiparty Collaborative Problem Solving using Multidimensional Recurrence Quantification Analysis. Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2019).

Vrzakova, H., Begel, A., Mehtätalo, L., & Bednarik, R. (2020). Affect Recognition in Code Review: An In-situ Biometric Study of Reviewer's Affect, Journal of Systems and Software, 159.

Gale, E., Berke, M., Benedict, B., Olson, S., Putz, K. & **Yoshinaga-Itano, C.** (2019): Deaf adults in early intervention programs, Deafness & Education International, DOI: 10.1080/14643154.2019.1664795.

VanDam, M. & **Yoshinaga-Itano, C.** (2019). Use of the LENA Autism Screen with Children who are Deaf or Hard of Hearing. Medicina 55, 495; doi:10.3390/medicina55080495.

Yoshinaga-Itano, C. & Beams, D. (2019). The Early Years: Meeting the Needs of Families from Diverse Language Backgrounds. Cannon, J. & Guardino, C. (Eds.), Deafness and Diversity (Volume 2): Supporting learners who are d/Deaf or hard of hearing Multilingual Learners, Washington DC: Gallaudet University Press.

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STUDENT PUBS Cont.

Hinojosa, L. (in progress). Encountering and Becoming Role Models: Combating Underrepresentation in STEM through University-based Community Outreach. Paper to be submitted, 2020.

Hinojosa, L. (in progress). The Identity Development of Community Scientists in a Museum-Based Genetics of Taste Program. Paper to be submitted, 2019.

STUDENT PRESENTs Cont.

Hinojosa, L., Polman, J.L., Riedy, R. (2019, March). Who Gets to Contribute and How: Expanding Community Scientist Participation Beyond Data Collection. Citizen Science Association Conference (paper). Raleigh, NC.s

Hinojosa, L., Speer, Nicole. (2019, October). Encountering and Becoming Role Models: Professional Trajectories and Transitions. Engagement Scholarship Consortium (presentation). Denver, CO.

Riedy, R., Polman, J.L., **Hinojosa, L.** online demo at https://deception.machine the loop.com.(2019, March). Bidding for Participation in Scientific Research Across Moments, Weeks, or Months. Citizen Science Association Conference (paper). Raleigh, NC.

Hutt, S. presented at CHI 2019 in Glasgow, Scotland.

Hutt, S. presented at EDM 2019 in Montreal, Canada.

Jensen, E. presented at EDM 2019 in Montreal, Canada.

Stewart, A. presented at CSCW 2019 in Austin, Texas.

Stewart, A. presented at ICMI 2019 in Suzhou, China.

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Hinojosa, L., Polman, J.L., Riedy R. T. (under review). Expanding Public Participation in Science Practices Beyond Data Collection. Paper submitted, 2019.

Hinojosa, L., Polman, J.L., Riedy R. T. (under review). Expanding Public Participation in Science Practices Beyond Data Collection. Paper submitted, 2019.

Hinojosa, L., Swisher, E., Garneau, N. (under review). The Organization of Informal Pathways into STEM: Designing towards Equity. Paper submitted, 2019.

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STUDENT PUBS Cont.

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HAVE QUESTIONS? NEED HELP?

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Tammy Sumner, Director
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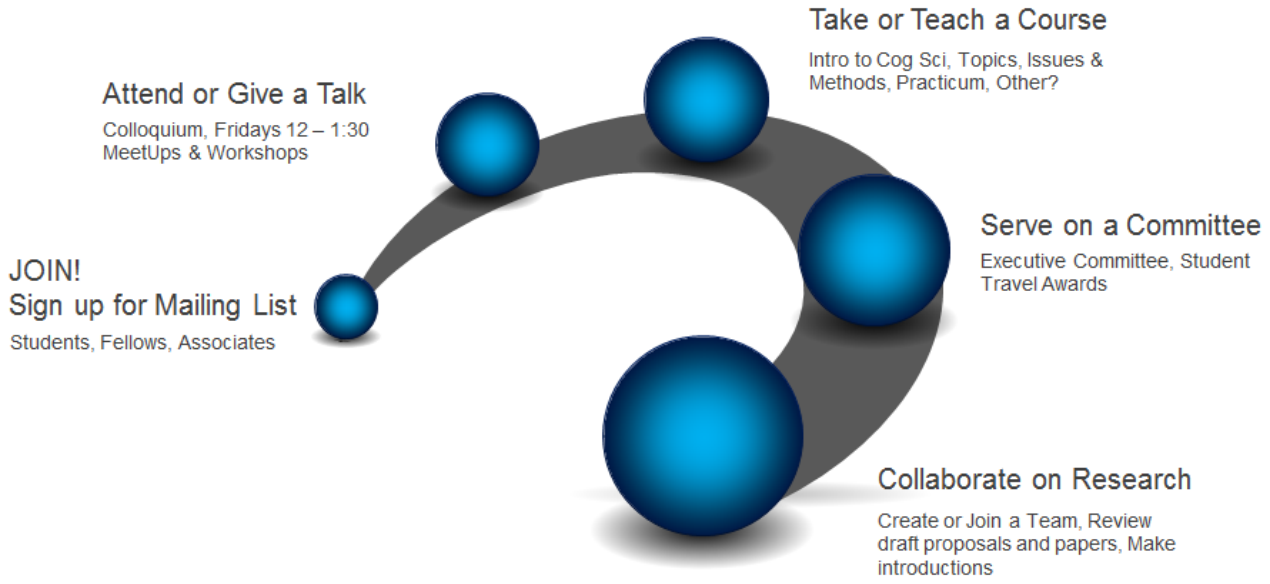
CINC 182j: Thursdays 1-3pm

The ICS newsletter is looking for researchers and students to feature in the Spring Edition 2020.

Interested? Contact Yasko.Endo@colorado.edu

WAYS TO GET INVOLVED WITH ICS



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- Be a campus leader in inclusiveness, diversity, and equity
- Reimagine our interdisciplinary educational programs
- Develop a robust resource engine to support future growth

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