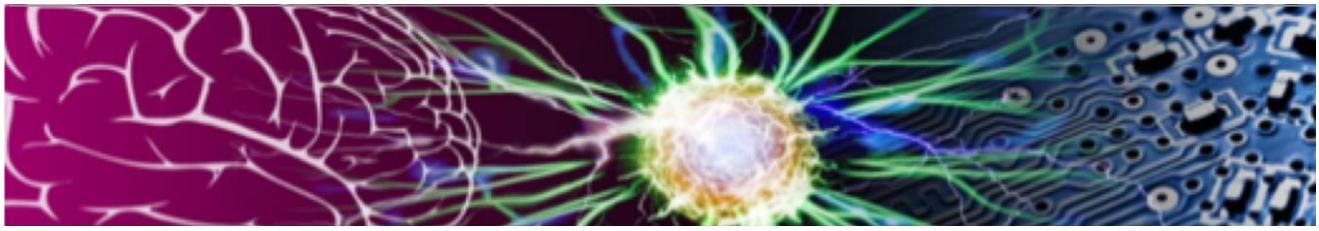
INSTITUTE OF COGNITIVE SCIENCE

2021 Fall Semester Newsletter



FROM THE DIRECTOR

Friends,

What a difference a year makes! This time last year, we were operating at 25% capacity in our color-coded zone configurations. This year, we are looking forward to a fall semester with some semblance of normalcy.

A Major Shift in CU's COVID-19 (Covid) Strategy

CU has officially changed its Covid strategy this fall, shifting from responding to Covid in "crisis" mode to "managing" its presence on campus and in our community as part of our normal operating procedures. The core assumption driving this change in university policy is that Covid is here to stay for the foreseeable future and we need new operating procedures that acknowledge this. The campus is adopting a dual approach for managing Covid going forward: (1) requiring all faculty, staff, and students to be vaccinated, and (2) requiring masks to be worn indoors at all times. The rationale for this dual approach is that vaccinations and masks have been shown to be very effective at preventing infection and they are both free (to CU) to implement. So, there are no plans to reintroduce social distancing requirements (barring changes in Boulder County guidelines) and shutdowns/partial closures of campus facilities will be avoided if at all possible.

How Will This Impact ICS?

Our classroom and research facilities are fully open for business this fall!

Our **MUEN facilities are open**, including our Data Collection facility. The MUEN ICS office hours are a mix of in-person and virtual. The up-to-date schedule is on the website, or contact Jean.Bowen@colorado.edu. This office has traditionally been the place where students interested in our educational programs come first to sign up and learn more.

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IN THIS ISSUE

FROM THE DIRECTOR cont.

Over the coming weeks, several of the research protocols taking place at CINC during the pandemic are being relocated to our MUEN Data Collection facility to be closer to the student study population.

Our **CINC facilities are fully open.** Everybody with assigned seating - pre-Covid - at CINC is welcome to return to their offices and all conference rooms and huddle spaces are available for use. We will be implementing conference room upgrades that were underway (new monitors, better support for video conferencing) that were so rudely interrupted by the pandemic. As I mentioned during the Kickoff, we grew 12% last year during the pandemic, driven by our new large awards (the National AI Institute for Student-AI Teaming and the OpenSciEd High School Initiative). This surge in our CINC population, coupled with the imminent remodel to accommodate the growing Bidwell lab, means that we will need to do some fresh thinking about how our space is being used, as well as some rearranging. This will undoubtedly take the entire academic year to implement so I thank you in advance for your patience and flexibility during this process!

CINC Remodel Update. Getting settled this year depends on the speed and state of the remodel in support of the Bidwell Lab, which was beset by HVAC complications. This old and underpowered HVAC system is now going to be upgraded. Unfortunately, protracted negotiations with various groups on campus concerning who is responsible for HVAC has delayed the start of construction until later this fall, with estimated completion dates ranging from February to early May. At the end of the day, all parties agreed to do the right thing (split the costs); but it sure would have been cheaper, faster, and less stressful if we could have agreed to this last year instead of debating it for nearly 18 months. Associate Director Donna Caccamise deserves a medal for perseverance!

Our weekly **Colloquia Series** will continue to take place over Zoom. Between the new campus budget cuts and our speakers' travel hesitancies, it makes sense to stick to the remote format for this semester. With respect to our Annual Fall Kickoff, this year we split the festivities into two sessions: a Welcome Picnic totally oriented on lovely food and meeting up f2f, and a zoom session devoted to our usual orientation and research highlights "variety show".

The Welcome Picnic was our first chance to see each other in over 18 months! Community feedback on this new picnic event was very positive (we all really liked the new caterers!) and we anticipate doing this again next year.

ICS staff quickly adjusted to remote working this past year, and quite frankly, totally rocked! During this year, in addition to supporting our largest portfolio of grant projects ever, they implemented a major reorganization and on boarded two new grant managers (Lakshmi and Rachel). This year, our staff will be experimenting with new hybrid models of work, where they are in the office some days and working from home others. With the 12% surge in our numbers, we no longer have sufficient office space at CINC to accommodate all of our staff and they have graciously agreed to prioritize bringing back critical research functions first. So, let's be sure to be patient with our staff over the coming months and support this much-needed experimentation in the future of work!

Other news to share with you, ranging from good to slightly terrifying!

- We have **rebooted the joint fMRI/cognitive neuroscience faculty search** with Psychology and Neuroscience. P&N Chair Irene Blair deserves much kudos for getting this search back on track during these challenging budget times. Be sure to express your gratitude when you next see her! A search committee has been formed, with Prof. Marie Banich serving as Chair. The job description has been posted, and we are currently accepting applications. The committee will start reviewing them on October 1. Please use your collective social networks to help market this position and encourage people to apply! We are looking for a "senior" faculty member; i.e., "with at least three years' experience in a tenure-track position if not more."
- We now have a beta release of our proposed Research Career Ladders for Professional Research Assistants and Research Associates. More information on these Ladders is available in a short article elsewhere in this newsletter.

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FROM THE DIRECTOR cont.

Other news to share continued:

- We have switched our newsletter publication schedule, so that **newsletters will now be published at the beginning of semesters**, instead of at the end. We hope that this change will enable our newsletters to serve as a guide for both new and returning members and help us all to navigate the complex mix of people, ideas, and activities that comprise our institute, and we hope to build on the excitement that the start of a new semester brings. This means that our Fall newsletters (such as this one) will be published in mid-September, while our Spring newsletter will come out in early February.
- Under the heading of slightly terrifying news, **Associate Director Donna Caccamise has announced that she plans to retire** in February 2022. OMG! What are we going to do!?!?!?! Donna has supported ICS through three Directors (this is all of them!) and is our fount of organizational knowledge and wisdom. She will be sorely missed. Over the coming weeks, we will be working on a job description for this critical role and starting a search process. Sigh. Change is hard. We will also be thinking creatively about how to celebrate and commemorate Donna's many contributions to our Institute and our community. Please contact me if you have ideas!

As usual, we have a lot to do this year: not even a global pandemic could slow us down. I am looking forward to reconnecting with you all over the coming months.

Tammy
Director, Institute of Cognitive Science

FACULTY PROMOTIONS

Congratulations!

Sidney D'Mello to Full Professor
Sarel Van Vuuren to Associate Research Professor
Quentin Biddy to Assistant Research Professor



Sidney Sarel Quentin

PUBLICATION HIGHLIGHTS

Faculty/Fellows/Research Assistants

Biddy, Q. Gendreau Chakarov, A., **Bush, J.B.**, **Hennessy Elliot, C. Jacobs, J.,** Recker, M., **Sumner, T.** & **Penuel, W.** (2021). A professional development model to integrate computational thinking into middle school science through co-designed storylines. Contemporary Issues in Technology and Teacher Education, 21(1).

Bhaduri, S., **Biddy, Q.**, **Bush, J.**, **Suresh, A.**, and **Sumner, T.** 2021. 3DnST: A Framework Towards Understanding Children's Interaction with Tinkercad and Enhancing Spatial Thinking Skills. Paper accepted for ACM Conference on Interaction Design and Children (IDC '21).

Bhaduri, S., **Biddy, Q.**, Rummel, M., **Bush, J.**, **Jacobs, J.**, Recker, M., Ristvey Jr, J. D., Chakarov, A. G. & **Sumner, T.** (2021). Integrating Professional Mentorship with a 3D Printing Curriculum to Help Rural Youth Forge STEM Career Connections. Accepted for 2021 ASEE Annual Conference & Exposition. ASEE Conferences, Long Beach, California.

Gendreau Chakarov, A**., Biddy, Q.**, **Jacobs, J.**, Recker, M., **Sumner, T.**, **Bush, J.B.** & **Hennessy Elliott, C.** (2021). Supporting teachers to implement engineering design challenges using sensor technologies in a remote classroom environment. Paper submitted to the annual meeting of the American Society for Engineering Education.

Learning in Matrix Games Can Be Arbitrarily Complex, COLT 2021. G Andrade, **R Frongillo**, G Piliouras. https://arxiv.org/abs/2103.03405

Learning in Matrix Games Can Be Arbitrarily Complex, COLT 2021. G Andrade, **R Frongillo**, G Piliouras. <https://arxiv.org/abs/2103.03405>

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Institute of Cognitive Science
UNIVERSITY OF COLORADO BOULDER

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2021-2022 ICS EXECUTIVE COMMITTEE

SEEKING NEW EXECUTIVE COMMITTEE MEMBERS!

We are looking for two faculty and one graduate student to join the committee this year.

1. Advise on Institute policies, hiring, expenditures, merit reviews
2. Level of Effort: 5 - 8 hours per semester
3. Terms
   Two-Year Term - Faculty & Fellows
   One year Term - Student
4. Email nominations by Sept 17, donna.caccamise@colorado.edu

Voting email coming soon, complete and return by September 24.

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

- **Al Kim**
  Associate Professor - ICS/Psych & NeuroScience
- **McKell Carston**
  Assistant Professor - ICS/Psych & NeuroScience
- **Quentin Biddy**
  Assistant Research Professor - ICS

Thank you to the following members who gave ICS their service and are stepping down. We are grateful for your dedication and participation.

- **Leanne Hirshfield**
  Associate Research Professor - ICS
- **David Quigley**
  Former RA/Instructor - ICS/CS
- **Abhijit Suresh**
  PhD Student - CS/NeuroScience/ICS

Ex Officio members who will continue to serve, thank you for your leadership:

- **Donna Caccamise** ICS Associate Director
- **Matt Jones** CRT Director
- **Nicole Speer** INC Director of Operations
- **Cinnamon Bidwell** CU REACH Director
- **Tamara Sumner** ICS Director

Visit the ICS Website

https://www.colorado.edu/ics

PUBLICATION Continued

Forecast Evaluation of Quantiles, Prediction Intervals, and other Set-Valued Functionals, Electronic Journal of Statistics, 15(1), 2021. T Fissler, **R Frongillo**, J Hlavinova, B Rudloff.

Elicitation Complexity of Statistical Properties, Biometrika, 2021. **R Frongillo**, IA Kash.

Healy, A. F., Schneider, V. I., Buck-Gengler, C. J., Kole, J. A., & Barshi, I. (2020). Intention to respond in a special way protects against forgetting associations even when working memory is occupied. American Journal of Psychology, 133, 415-426.

Wohldmann, E. L., & **Healy, A. F.** (2020). Learning and transfer of calorie information. Applied Cognitive Psychology, 34, 1485-1494.

Proctor, R. W, & **Healy, A. F.** (2021). Visual selection and response selection without effector selection in tasks with circular arrays. Attention, Perception, & Psychophysics, 83, 637-657.

Kole, J. A., Barshi, I., **Healy, A. F.**, Schneider, V. I., & Buck-Gengler, C. J. Comparison of astronauts and undergraduates on simple motor and complex memory tasks. Poster presented at 21st International Symposium on Aviation Psychology, virtual, May 18-21, 2021.

Hennessy Elliott, C., Gendreau Chakarov, A., **Biddy, Q.**, **Bush, J.B.**, **Jacobs, J.** & Recker, M. (2021). Teacher learning as co-operative work to expand images of future classrooms. Paper submitted to the annual meeting of the International Society of the Learning Sciences.

Edelson, D. C., Reiser, B. J., McNeill, K. L., Mohan, A., Novak, M., Mohan, L., Affolter, R., McGill, T. A. W., Bracey, Z. B., Noll, J. D., Kowalski, S. M., Novak, M., Lo, A. S., Landel, C., Krumm, A., **Penuel, W. R.**, Van Horne, K., González-Howard, M., & Suárez, E. (2021). Developing research-based instructional materials to support large-scale transformation of science teaching and learning: The approach of the OpenSciEd middle school program. Journal of Science Teacher Education.

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CONGRATULATIONS TO FACULTY & FELLOWS

Congratulations ICS Fellow and Professor in School of Education Joe Polman for his election as Fellow of the International Society of the Learning Sciences (ISLS). This is the highest honor for a member of our community of learning scientists in the Society.

Kent Hutchison, ICS Fellow and Professor in the Department of Psychology and Neuroscience at CU Boulder and CU Denver Anschutz Medical Campus received a 2020 Distinguished Research Lectureship. He delivered the 116th Distinguished Research Lecture in spring of 2021 titled, Understanding the Risks and Benefits of Cannabis Across the Lifespan. Congratulations!

Rafael Frongillo, ICS Fellow and Assistant Professor in the Department of Computer Science received a NSF Career Award titled "Information Elicitation in Algorithmic Economics and Machine Learning". Congratulations!

Congratulations ICS Research Associate Melanie Peffer for receiving an Alpha Chi Omega Outstanding Faculty award and receipt of the 2021 High Plains Library Foundation Writer in Residence.

FACULTY, FELLOWS, RESEARCHER SPECIAL MENTIONS

Members of ICS (Chelsea Chandler, Peter Foltz, Jim Martin, and Martha Palmer) have started working with CU's Office of Data Analytics on a project investigating using natural language processing methods to improve detection of atypical responses in the CU's Faculty Course Questionnaires. The work is aimed at improving the efficiency and quality of detection of potential in stances of harm to self or others, sexual harassment, and other violations of university policies.

Peter Foltz gave a talk at the University of Melbourne meetup on AI in Mental Healthcare.

Kerri Wingert, Quentin Biddy, Jen Jacobs, and Bill Penuel's project 'Making Aligned Student Tasks Equitable with Rural Science' at the COVID, Equity & Social Justice conference was featured in the 2021 STEM for All Video Showcase.

Donna Caccamise and the eBRAVO research team showcased a project video at ED Games Expo, with co-PI Peter Foltz, and research staff John Weatherley, David Quigley, Rachel Lieber, Eileen Kintsch.

Kerri Wingert and an interdisciplinary and faculty research group received an Office of Outreach and Engagement Outreach Award 2021-22 titled **Fostering Inquiry-Based K-12 Science Teaching with Authentic Data**.

Robert Rupert became co-Editor-in-Chief of the British Journal for the Philosophy of Science, which includes coverage of topics in philosophy of the cognitive sciences.

'Special Mentions' include information submitted by faculty, fellows, and researchers and is not an exhaustive list of activities.

WELCOME TO THE ICS COMMUNITY

New ICS Fellow

Ellen Do is a Professor at ATLAS Institute and the Department of Computer Science, and director of the ACME Lab. Ellen is working in the intersection of people, design and technology, creativity and design cognition, including creativity support tools and design studies, tangible and embedded interaction and, most recently, computing for health and wellness.

New ICS Research Affiliate

Recently retired from Duke University, Pate Skene is a neurobiologist and attorney investigating brain mechanisms involved in decision-making related to law, cooperation, and risk. He will collaborate with ICS on his new NIH award, 'Genomics, Variation, and Evolution of Cerebellar Circuits Linked to Higher Cognitive Functions in Humans'.

Visiting Scholars

Amelia Kelly, Fulbright TechImpact Scholar completed her collaboration over the summer. Amelia is the Vice President of Speech Technology, head of SoapBox Labs. She will carry out a project called CARNIVAL: Child Automatic speech RecognitioN to measure academically productIVe tAlk in the cLassroom as part of the TalkBack Project.

Welcome Lisa Miracchi, Associate Professor of Philosophy at the University of Pennsylvania and visiting scholar with the CU Boulder Department of Philosophy. She works on issues regarding mind and intelligence including work on the ethics of Autonomous Weapons Systems, the impact of the widespread feminization of AI on society, and how to best conceptualize complexity as related to cognition and behavior of biological and artificial systems.

RESEARCH CAREER LADDERS & New Jobs & HR Webpage

Research Career Ladders

Research Career Ladders were created to provide transparent and objective "determination factors' which help assess job complexity and responsibilities so that position types and salary levels can be consistently determined. Login to Google with your CU email to view the Research Career Ladders document.

The Ladders are a result of both the Colorado Equal Pay Act and guidance from the IDEC Survey and other CU climate surveys. They currently supports Research Associates and Professional Research Assistants.

When to use the Ladders:

- Developing proposals, hiring, promotion, merit raises, self-assessment, and professional development.

Jobs & HR Webpages

As an Equal Opportunity Employer, we are committed to building a diverse and inclusive workforce. To improve transparency about our workplace, a new Jobs & HR web section has been added to the ICS website.

RESEARCH ACTIVITY HIGHLIGHTS

Marta Čeko was awarded a two-year R21 National Institute of Health (NIH) sponsored grant titled 'Automated Physiological Assessment of Chronic Pain in Daily Life' is under the National Institute of Nursing Research (NINR) of NIH. The R21 grants are 'Exploratory/Developmental'.

This work has significant public health relevance according to the NIH: "The United States is in the midst of dual epidemics of chronic pain and opioid abuse and treatments to reduce pain without opioids are therefore crucial and urgent - psychological treatments have shown potential but also limited efficacy thus far. Using wearable sensors and experience sampling, will record multiple physiological and psychological signs of pain to develop computational models of real-life fluctuations in chronic pain levels. The findings of this proposal will translate into psychological interventions better matched to psycho-physiological signs of clinical pain and will deepen our understanding of the multidimensional nature of chronic pain." Learn more >>

Is there a way to get a song-on-repeat out of our heads? Can obsessive and compulsive thinking be stopped so new thoughts and ideas can surface? ICS faculty, executive director of ICS' imaging enterprise, the Intermountain Neuroimaging Consortium (INC) housed at ICS, and professor of psychology and neuroscience, Marie Banich co-authored the findings that begin to answer these questions, published in the journal Nature Communications.

Marie stated, "we found that if you really want a new idea to come into your mind, you need to deliberately force yourself to stop thinking about the old one." How do you make yourself stop thinking about an old thought?... The bottom line is: if you want to get something out of your mind quickly use 'clear' or 'replace,'" said Marie "But if you want to get something out of your mind so you can put in new information, 'suppress' works best."

Read examples of how to 'clear', 'replace', 'suppress' thoughts in this CU Boulder Today article.

Cinnamon Bidwell and Tim Curran co-lead a multi-PI, multi-facility R01 grant awarded by the NIH. The award, 'ERP Studies of Acute Influences of THC and CBD on Memory Encoding and Retrieval Processes' is a five-year study. Tim stated, "Our global hypothesis is that the effects of cannabis on memory vary as a function of the ratio of CBD to THC, with THC having adverse effects that may be counteracted by CBD. The goal of this study is to test the effects of three real-world commercially available cannabis strains that differ markedly in their ratio of CBD to THC. To that end, we will test the effects of -THC/+CBD (0% THC/16% CBD), +THC/-CBD (16% THC/0% CBD), and +THC/+CBD (16% THC/16% CBD) strains on recognition memory as well as event-related brain potentials (ERPs) that have previously been found to be related to different underlying memory processes. We use a naturalistic observational design in which each participant will complete the same memory task while intoxicated one day and not intoxicated another day (order counterbalanced)." Learn more >>

Quentin Biddy and Tammy Sumner are Co-PIs on a new National Science Foundation (NSF) ITEST STEM Career Connections (STEMCC) award along-side UCAR. The three-year project titled 'A Model for Preparing Economically-disadvantaged Rural Youth for the Future Workforce' began in 2020 and is entering its second year. Quentin is researching and developing open source resources to support in-school and out-of-school programs to integrate Computational Thinking with mentoring with local STEM professionals along with explicit connections to local STEM careers and career pathways.

This summer the team worked with 112 middle school youth, 10 teachers, 8 STEM mentors, and 6 high school interns researching and supporting a STEM summer program. Youth investigated programming and sensors, made connections to local STEM careers and career pathways, and worked with STEM professionals in their community to make explicit connections between their computing related investigations and STEM in their community.

Learn more >>

ICS CENTERS' UPDATES

All of the centers have expanded their work throughout the pandemic. See each center's detailed updates on the webpage, '2021 Fall Semester Newsletter ICS Centers' Updates'.

Center for Research and Education Addressing Cannabinoids and Health (CU REACH) has been fortunate to continue research and community engagement activities throughout 2020/2021, maintaining a strong connection with its mission to provide empirical data to alleviate the suffering of those affected by diseased states through cannabis use.

At the Center for Research on Training (CRT), interest has recently rekindled on undergraduate education. The current focus is the incentive structure for professors and instructors.

The inquiryHub (iHub) research-practice partnership just released a full-year, free high school chemistry curriculum, and launched a major initiative to develop a three-year high school curriculum aligned to the Next Generation Science Standards. It continues to provide Professional Learning with the full-year, free high school biology curriculum.

This June the Intermountain Neuroimaging Consortium (INC) celebrated one year of successfully operating during a pandemic. INC was one of the first of its kind facilities to reopen in June 2020. Thanks to the partnership of INC staff and the many research teams using our facility over the past year, it has remained open continuously since last summer.

Neither Covid nor IRBs nor faulty Zoom calls can shift this institute from our mission. The NSF AI Institute for Student-AI Teaming (iSAT) had a busy first eight months, despite the numerous challenges set by starting an institute in the midst of a pandemic.

DISSEMINATION & OUTREACH ACTIVITIES

New on the Website

Diversity, Inclusion, Equity Content

Jobs & HR Content

Recordings of 2020-2021 Virtual Colloquia

Improved Graduate and Undergraduate Program Pages

CHECK YOUR PERSON PAGES – SEND UPDATES TO ICS-Comms@colorado.edu

ICS at the Speed of Light Research Presentations

Fourteen graduate Certificate, Combined PhD, Triple PhD, Visiting Scholar, and Research Associates rose to the challenge of presenting virtual Research Lighting Talks in April to celebrate their accomplishments.

Zoom video recording of the session is available.

Fine out more about the presentations at ICS Lightning Talk Session 2021

DISSEMINATION & OUTREACH ACTIVITIES Cont.

Inclusion, Diversity, Equity Committee (IDEC)

Join the Weekly Gatherings!

- Tuesday at 4:00pm
- Email ICS_IDEC@colorado.edu for Zoom links
- IDEC melds creating a safe and welcoming community space with taking actions to build a better Institute.
- Learn more about our work.

Upcoming Events

- Equity in the Practice of Research Workshop Series
  - Register for Session 2 September 29, 12:00 – 1:30 on data collection and equity
- BIPOC Meetups for the Research Enterprise and Beyond
- Cross-Institute White-ally/accomplice Working Group

Check Out Resources

- ICS website Diversity pages.
- RIO Diversity pages with crowdsourced resources for diverse members. IDEC led the creation of this online diversity hub.

Gratitude

- Thank you Nicole Speer as she rotates off as lead-facilitator.
- Welcome Veronica Koral as the new lead-facilitator.
- Thank you Tammy, Donna, and the Executive Committee for continuing to financially support IDEC efforts.
- Great job all who participated in the Racial Equity Challenge 2021 for Institutes.
- Read a summary of what we have accomplished to date.

IDEC Mission

- To create an organization where everyone, regardless of visible and invisible differences, can thrive in their learning, research, teaching, and professional development through feeling safe, respected, welcomed and supported.

PUBLICATION HIGHLIGHTS cont.

Faculty/Fellows/RA

Furtak, E. M., **Penuel, W. R.**, Badrinarayan, A., Duwe, S., & Patrick-Stuart, R. (2021). Assessment of crosscutting concepts: A sensemaking perspective. In O. Lee & J. Nordine (Eds.), Crosscutting concepts: Strengthening science teaching (pp. 333-356). NSTA Press.

Reiser, B. J., Novak, M., McGill, T. A. W., & **Penuel, W. R.** (in press). Storyline units: An instructional model to support coherence from the students' perspective. Journal of Science Teacher Education.

Penuel, W. R., Furtak, E. M., & Farrell, C. C. (2021). Research-practice partnerships in education: Advancing an evolutionary logic of systems improvement. Die Deutsche Schule, 113(1), 45-62. https://doi.org/10.31244/dds.2021.01.05

Coburn, C. E., Penuel, W. R., & Farrell, C. C. (2021). Fostering educational improvement with research-practice partnerships. Phi Delta Kappan, 102 (7), 14-19.

Potvin, A., Teeters, L. P., & **Penuel, W. R.** (2021). Designing for compassion in schools: A humanizing approach to co-design. In Proceedings of the International Society of the Learning Sciences Annual Meeting. Bodum, Germany: International Society of the Learning Sciences.

Stamatis, K., Pradhan, I., & **Penuel, W. R.** (2021). Becoming a STEAM teacher: Co-construction of a zone of proximal identity development to support program implementation. In Proceedings of the International Society of the Learning Sciences Annual Meeting. Bodum, Germany: International Society of the Learning Sciences.

Furtak, E. M., Badrinarayan, A., **Penuel, W. R.,** Duwe, S., & Patrick-Stuart, R. (2021). Assessment of crosscutting concepts: A sensemaking perspective. In O. Lee & J. Nordine (Eds.), Crosscutting concepts. Washington, DC: NSTA Press.

Penuel, W. R., & **Schultz, K.** (2021, March 25). A better way to make sense of pandemic 'learning loss.' Washington Post.

Furtak, E. M., Shepard, L. A., **Penuel, W. R.** (2021). Going forth with standardized tests may cause more problems than it solves. The Conversation. https://theconversation.com/going-forth-with-standardized-tests-may-cause-more-problems-than-it-solves-155231

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PUBLICATIONS HIGHLIGHTS Cont. **Faculty/Fellows/RAs**

Raza, A., Penuel, W. R., Allen, A.R., Sumner, T., & **Jacobs, J.** (2021). "Making it Culturally Relevant": A Visual Learning Analytics System Supporting Teachers to Reflect on Classroom Equity. In International Society of the Learning Sciences (ISLS) Annual meeting, Bochum, Germany. P.1-8

Penuel, W., **Wingert, K.**, Curran, A., Warrior, D., & Sidler, E. (2021, April 10). Co-Created Learning: Interest Surveys in the Content Areas. In symposium, Fostering Deeper Learning in Research-Practice Partnerships: Theoretical and Practical Perspectives. Symposium at the American Education Research Association, Online.

iSAT: Bishop, K., Haynes, B., and Roncone, A. (2021). "Teaching Grounded Reading Skills via an Interactive Robot Tutor." Workshop on Robots for Learning at the Human-Robot Interaction annual conference (HRI 2021).

iSAT: Du, W. and Flanigan, J. (2021). "Avoiding Overlap in Data Augmentation for AMR-to-Text Generation." Proceedings of the Association of Computational Linguistics annual conference (ACL-IJCNLP 2021).

iSAT: Ganesh, A. (2021). "What Would a Teacher Do? Predicting Future Talk Moves." Accepted by the Association of Computational Linguistics annual conference (ACL-IJCNLP 2021).

iSAT: Hubbard, L., Ding, S., Le, V., Kim, P., Yeh, T. (2021). "Voice Design to Support Young Children's Agency in Child-Agent Interaction." Proceedings of 2021 ACM Conference on Conversational User Interfaces.

iSAT: Hubbard, L., Chen, Y., Colunga, E., Kim, P., Yeh, T. (2021). "Child-Robot Interaction to Integrate Reflective Storytelling Into Creative Play." Proceedings of the 2021 ACM Conference on Creativity and Cognition.

iSAT: Krishnaswamy, N., & Alalyani, N. (2021). "Embodied Multimodal Agents to Bridge the Understanding Gap." Proceedings of the First Workshop on Bridging Human–Computer Interaction and Natural Language Processing at 16th Conference of the European Chapter of the Association for Computational Linguistics (pp. 41-46).

Find Out More About iSAT
National AI Institute for AI-Student Teaming

iSAT: Li, Z. and Whitehill, J. (2021). "Compositional Embedding Models for Speaker Identification and Diarization with Simultaneous Speech from 2+ Speakers." Proceedings of the International Conference on Acoustics, Speech and Signal Processing annual conference (ICASSP 2021).

iSAT: Pugh, S., Subburaj, S.K., Rao, A.R., Stewart, A., Andrews-Todd, J., **D'Mello, S.K.** (2021). "Say What? Automatic Modeling of Collaborative Problem Solving Skills from Student Speech in the Wild." Proceedings of the International Educational Data Mining conference (EDM 2021).

iSAT: Trabelsi, A., Chaabane, M., Blanchard, N., Beveridge, R. (2021). "A Pose Proposal and Refinement Network for Better 6D Object Pose Estimation," IEEE Winter Conference of Applications on Computer Vision (WACV 2021) (Best Student Paper Award)

iSAT: Wang, H., Gaddy, V., Beveridge, R., Ortega, F. (2021). "Building an Emotionally Responsive Avatar with Dynamic Facial Expressions in Human—Computer Interactions." Multimodal Technologies and Interaction, 5:3.

DISSEMINATION & OUTREACH ACTIVITIES Cont.

From local newspapers to national news outlets, ICS researchers help bring Research to Real Life, making the work relevant to the public. Here are a few highlights from the past eight months. More in the ICS web News

Bill Penuel ICS faculty and Kathy Schultz's editorial addressing learning loss due to the pandemic was featured in the Washington Post.

Michael Joseph Schneider, ICS PhD student's summer camp was featured in the Boulder Daily Camera.

Cinnamon Bidwell was quoted in yahoo!news article on 'Potency Limits are the New Frontier in Marijuana Debate'

Angela Bryan, ICS Fellow continues to show up in a variety of online publications for the results of a study on the use of cannabis around and during physical activity.

Cinnamon Bidwell ICS faculty and Fellows Angela Bryan and Kent Hutchison appeared in an NBC Nightly News video about the Mobile Labs used in CU REACH and CU Change research.

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DISSEMINATION & OUTREACH ACTIVITIES Cont.

Innovative Ways to Reach a Broader Audience and Make Research Relevant to the Public

Melanie Peffer, ICS Research Associate, exemplifies taking scientific research and knowledge and making them accessible to a wide range of non-researcher and non-academic audiences. Read on for the plethora of methods she uses to bring science research in to the everyday lives of the public.

- **TEDxCU** talk
- **TED-ED** lesson on Neuroscience and Art: Uncovering the Brain's Biggest Secret
- Numerous **podcast** appearances (Finding Genius, Ask a Scientist, Curiosity Cake, Loveland Strong)
- Blog articles including PLOS Sci COMM, BioGirls, Lifeology
- **Public presentations**: Fort Collins Museum of Discovery, Seed and Feed Marching Abominable Band Rehearsal (Atlanta, GA), Rotary International, Poudre Learning Center Biology Everywhere Day. I'll also be speaking at University of Minnesota next week and have a public appearance at the Environmental Learning Center in Vero Beach, FL.
- **FB live** for Fort Collins Museum of Discovery's "Discovery Live! Ask a Scientist" series, Melanie speaks about her research and new NSF grant, taking questions from the Museum community.

She is also highly well informed in leveraging Social Media (FB, Twitter, LinkedIn and other) to bring both academic and lay focus to her work. Brava Melanie for your multi-pronged approached to disseminating scientific research!

FALL COLLOQUIA

Starting with the highly informative and well-attended 2021 – 2022 academic year Kickoff meeting, ICS continues to benefit from offering virtual colloquia. The ICS colloquium room has a capacity of 46, and we continue to consistently exceed this limit for every gathering.

- Colloquia Schedule for 2021 - 2022
- Join Zoom Meeting
  - https://cuboulder.zoom.us/j/93870297667
  - Meeting ID: 938 7029 7667
- Past Colloquia Recordings

NEWSLETTER ARCHIVE

Newsletters published since spring of 2016
are available on the ICS website.
Look for the black and gold box on the right sidebar
of the About Us page.

SPRING STATE OF ICS

Time flew so fast in the spring this year, that you may have missed reading the 'ICS State of the Institute 2020'.

Terri Fiez (our Dean) makes all the Directors write and submit a document, following her outline every year, where we summarize the previous calendar year.

This 2020 report gives us all an excellent perspective on how hard we all worked to adapt to conduct research during a pandemic, the inspiring growth we experienced, diversity-equity-inclusion progress, and what we set ourselves to accomplish in 2021.

Great job everyone!

STUDENT HIGHLIGHTS AT ICS

ICS Program Completion – Congratulations!

Completions between November 2020 and August 2021

Ph.D.		
Srinjita Bhaduri	Combined PH.D.	Computer Science, Cognitive Science
Spencer Dudley	Triple Ph.D.	Education, Neuroscience & Cognitive Science
Layne Hubbard	Triple Ph.D.	Computer Science, Neuroscience & Cognitive Science
Sarah Moeller	Ph.D.	Linguistics
Michael Sechman	Combined PH.D.	Philosophy & Cognitive Science
Lisa Thomas-Smith	Ph.D.	Philosophy, Cognitive Science
Graduate Certificate		
Janghee Cho	Graduate Certificate	Information Science
Josh Daniels	HLT Certificate	Linguistics
Undergraduate Certificate		
Jessica Y Bae		Computer Science
Ash (Ashley) Knapp		Speech, Language & Hearing Sciences
Rafael Orozco Leon		Psychology & Neuroscience
Hugo Rost		Speech, Language & Hearing Sciences
Victoria Schmidt		Speech, Language & Hearing Sciences
Marissa Wichers		Speech, Language & Hearing Sciences

WELCOME ATLAS STUDENTS

Our academic programs continue to grow. Students from the ATLAS Institute will participate as a formal affiliated unit in our undergraduate and graduate certificate programs as well as our combined PhD program. A curated series of courses for both the undergraduate and graduate programs are under development.

ICS welcomes the ATLAS students!

ICS GRADUATE & CERTIFICATE PROGRAMS

ICS offers graduate and undergraduate certificate programs and combined PhD programs.

Find out more about the programs on the website.

Graduate Programs Undergraduate Programs

DISSERTATION SPOTLIGHTS

Srinjita Bhaduri

Teach3D: Toolkit for Effective Teaching of 3D Modeling and Spatial Thinking Skills in Middle School

Advisor: Tammy Sumner

Srinjita (Dept. of Computer Science (CS) studied ways to design effective 3D printing and modeling pedagogies for K-12 students. She focused on how learning Computer-Aided Design (CAD), or 3D modeling, can enhance spatial thinking skills, an essential skill for success in Science, Technology, Engineering, and Mathematics (STEM). However, 3D modeling is not intuitive and requires a lot of training and practice. In her dissertation, she looked at ways to make 3D modeling and printing approachable to middle school students through an inquiry-driven curriculum and the Teach3D toolkit.

The toolkit consists of guidelines for educators and enables students to create 3D printed prosthetics for animals with disabilities and support spatial thinking skills. Integrated with the toolkit is an Augmented Reality application that serves as a scaffold for learning 3D modeling and design debugging. She examined the Teach3D toolkit in two middle schools with three STE(Arts)M and technology teachers and she hopes the toolkit can be used at large across other grade-levels.

Srinjita successfully defended her thesis in Summer 2021 and would like to thank to her PhD advisor, Tammy Sumner, and committee members William Penuel, Shaun Kane, Tom Yeh, and Ellen Do for their support. She really appreciates her fellow lab members and the ICS staff, Alan Dale, Jean Bowen, Ellen Mackenzie, and Cat Latzer, for their support, time, and guidance through her PhD journey. She also would like to thank her department graduate advisor Rajshree Shrestha for her constant guidance.

Spencer Dudley

Late Childhood Adversity and Neurocognitive Development: Exploring the Role of School Safety

Advisors: Allison Atteberry & McKell Carter

Spencer Dudley (School of Education) is interested in the application of quasi-experimental methods to study the influence of early adversity on brain and cognitive development. Using data from the Adolescent Brain and Cognitive Development (ABCD) Study, his dissertation research uses regression adjustment, coarsened exact matching, and family fixed effects to explore the effect of experiencing an unsafe school environment on 1) measures of higher-order cognitive skills and 2) volume and microstructural development of associated white matter tracts.

In keeping with existing work focused on other sources of adversity (e.g., poverty, abuse, and institutional rearing), results from regression and matching approaches find that children reporting an unsafe school environment perform lower on measures of fluid and general cognition. These approaches also point to significantly lower microstructural development of the corpus callosum and superior longitudinal fasciculi. Findings from family fixed effects models, which are superior in the area of internal validity, however, paint a different picture. When examining boys and girls together, results indicate no influence on neurocognitive development. Among boys only, microstructural development of the superior longitudinal fasciculi is greater for those who report an unsafe school environment. Findings suggest that—rather than reflecting causal relationships—the negative associations found using regression and matching are likely driven by family-level sources of bias.

Spencer would like to thank his advisors, Allison Atteberry and McKell Carter, for their support, thoughtful feedback, and openness to his pursuit of an interdisciplinary program. He would also like to extend this deep gratitude to the other members of his dissertation committee—Marie Banich, Mimi Engel, Roselinde Kaiser, and Benjamin Shear. Spencer intends to graduate in August of 2021 with a triple PhD in Research and Evaluation Methodology, Neuroscience, and Cognitive Science.

DISSERTATION SPOTLIGHTS Cont.

Sarah Moeller

Integrating Machine Learning into Language Documentation and Description

Advisor: Mans Hulden

Sarah Moeller (Department of Linguistics) wants to bridge the gap between linguistics and natural language processing in computer science. Her research applies machine learning to the study and preservation of endangered languages.

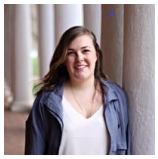
Her dissertation presented four new computational studies on the word-building properties (i.e. morphology) in nine typologically diverse and under-documented languages in order to address a lack of language data for machine learning models. The first study found that morpheme segmentation and glossing is best treated as two separate, sequential steps. This contrasts with the traditional joint and simultaneous approach by field linguists. The second study leveraged human, statistical, and other resources to increase the machine learning models' accuracy when learning morphological paradigmatic patterns only from word forms attested in field data. The third study improved the same task in some languages by augmenting the field data with unannotated data and artificially constructed "word". The fourth study found that the frequent lack of part of speech tags in field data does not negatively affect the previous tasks, despite the traditional emphasis on early part-of-speech tagging in natural language processing. The methods developed by her research can support technology to speed and improve the linguistic analysis and preservation of endangered languages and they could be applied in other domains that suffer from a lack of resources.

Sarah would like to thank her advisor Mans Hulden, committee members Martha Palmer, Andy Cowell, Katharina Kann, and Alexis Palmer, her co-authors Ling Liu and Changbing Yang, and the rest of the faculty, staff, and colleagues in Linguistics for their support! Sarah received her PhD in May 2021 and has accepted a position as assistant professor at the University of Florida.

HEADS UP STUDENTS – GET THE WORD OUT!

- Contact email for ICS Student Programs: ICSPrograms@colorado.edu 
- All Undergraduate and Graduate Programs students need to **APPLY** to ICS certificate and degree programs before starting. Step-by-step process is outlined in the updated:
  - Graduate Programs
  - Undergraduate Programs
- ATLAS Institute is now a unit formally affiliated with ICS 
  - Qualifying courses are being finalized
    - Work with your advisor and the ICS Academic Director to apply to an ICS Program and complete the form
- Students not with the 10 affiliated units/departments can apply to ICS programs
  - Email ICSPrograms@colorado.edu

STUDENT RECOGNITIONS



Chelsea Chandler gave a talk at the Louisiana State University Science Cafe presenting her work on applying AI for measurement of mental health states in a session called "The Doctor Is In (Your Phone)—How Digital Technologies Can Help Treat Serious Mental Illness"

Two of Peter Foltz's ICS graduate students had papers accepted to the Workshop on Computational Linguistics and Clinical Psychology (CLPsych) being held in conjunction with the North American Association of Computational Linguistics Conference in June.

Sagarika Shreevastava presented a paper titled "Detecting cognitive distortions".

Chelsea presented a paper titled "Safeguarding against spurious AI-based predictions: The case of the automated verbal memory assessment".

Students Ali Raza, Melissa Campanella, Yamileth Salinas Del Val (appearing in order to the left) and faculty Bill Penuel, lead a four-part professional learning series to support equity in science classrooms.

Twenty-five middle school science teachers attended as part of the work strand of Advancing Coherent and Equitable Systems of Science Education (ACESSE) project.

During the learning series, the teachers used the SEET tool and collaboratively implemented instructional strategies to support equity of participation.

Michael Schneider co-led a wearable technology summer camp at Broomfield Library's 'inventHQ' miniseries.

The camp was featured in the Boulder Daily Camera.

STUDENT TRAVEL & RESEARCH AWARDS

Summer 2021 Awardees

Congratulations to the following recipients of the ICS Student Travel & Research Awards:

- **Dr. Layne Hubbard** (CS)
- **Shirley Huang** (SLHS)
- **Alyssa Strickler** (LNG)

Apply Now for a Fall 2021 Award

- Deadline to apply is October 6.
- Details on the application process is on ICS website's Student Travel & Research Awards page.
- Jump to page 16 for a summary of the available awards.

WANTED! Committee Members

- Open seats are available to be filled by students from ATLAS, Architecture & Planning, Integrative Physiology, Education, and Philosophy.
- Task: review and select awardees as a student representative of your department
- **Representatives are needed from:**
  - **EDUC**
  - **PHIL**
  - **ATLAS**
  - **Architecture & Planning**
  - **Integrative Physiology**
- Contact Norielle.Adricula@colorado.edu

Thank You!

Thank you to the following outgoing members.

- Dr. Layne Hubbard (CS)
- Dr. Spencer Dudley (EDU)
- Dr. Lisa Thomas Smith (PHIL)

Continuing Committee Members

- LING - Norielle Adricula (Chair)
- CS - Maggie,Perkoff@colorado.edu
- INFO - Janghee.Cho@colorado.edu
- PSYC - Shannon.Mcknight@colorado.edu
- SLHS - Carly.Schimmel@colorado.edu

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STUDENT HONORS

Srinjita Badhuri received the Graduate and Professional Student Government 2021 Outstanding Research Assistant Award in the final semester of her graduate program.

She was also awarded the 2021 Center to Advance Research and Teaching in the Social Sciences (CARTSS) award of $1500 to further her research. CARTSS is a College of Arts and Sciences entity to assist graduate students in their research.

Varsha Koushik received four awards in 2021 Hope Schultz Jozsa Award, University of Colorado Boulder

- Provost Fellowship for the University Libraries, University of Colorado Boulder
- Summer Research Fellowship, Department of Computer Science, University of Colorado Boulder
- Carol B. Lynch Memorial Fellowship, University of Colorado Boulder

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Ali Raza received 2021 Diversity, Equity, and Inclusion Award – Honorable Mention, University of Colorado Boulder

CONGRATULATIONS TO ALL!

STUDENT AWARDS Cont.

More about the Awards

- Three times a year ICS graduate students can apply for awards
- Up to $500 a year to support ongoing research
- Up to $500 a cycle to support travel to present at or attend a conference ($700 a year max) (contingent upon COVID-19 updates to travel)
- Lifetime maximum of $3500 for travel and $2500 for research
- Applications are reviewed by student representatives from each department/unit

See the ICS website's Student Travel & Research Awards page for more details.

STUDENT PUBLICATION & PRESENTATION HIGHLIGHTS

Bhaduri, S., Biddy, Q., Rummel, M., Bush, J., Jacobs, J., Recker, M., Ristvey Jr, J. D., Chakarov, A. G. & Sumner, T. (2021). Integrating Professional Mentorship with a 3D Printing Curriculum to Help Rural Youth Forge STEM Career Connections. Accepted for 2021 ASEE Annual Conference & Exposition. ASEE Conferences, Long Beach, California.

Bhaduri, S., Biddy, Q., Bush, J., Suresh, A., and Sumner, T. 2021. 3DnST: A Framework Towards Understanding Children's Interaction with Tinkercad and Enhancing Spatial Thinking Skills. Paper accepted for ACM Conference on Interaction Design and Children (IDC '21).

Chandler, C. Presented a paper titled "Safeguarding against spurious AI-based predictions: The case of the automated verbal memory assessment". Workshop on Computational Linguistics and Clinical Psychology (CLPsych) being held in conjunction with the North American Association of Computational Linguistics Conference in June 2021.

Raza, A. presented the Student Electronic Exit Ticket (SEET) system demo at the 11th Learning Analytics and Knowledge conference (LAK'21) and received positive feedback from the community.

Raza, A. and Penuel, W. lead two sessions on the use of experience-based formative assessment in middle school science classrooms at the Science Assessment Task Resource Symposium.

Shreevastava, S. presented a paper titled "Detecting cognitive distortions from patient-therapist interactions" Workshop on Computational Linguistics and Clinical Psychology (CLPsych) being held in conjunction with the North American Association of Computational Linguistics Conference in June 2021.

Highlights include information submitted by students and is not an exhaustive list of activities.

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

https://www.colorado.edu/ics/

ICS OPERATION, OFFICE & ADMINISTRATION NEWS

ICS Operations & Facilities Updates from Associate Director Donna Caccamise

With the retirement of Alan Dale on Dec. 31, 2020 and the new grant awards that significantly expanded the ICS grant portfolio, it was time for a reorganization of our administrative assignments to create greater efficiencies while hopefully making things easier for researchers.

The larger vision was to provide PIs and their staff a 'one-stop shopping' experience. We have achieved this vision with the addition of two new grant administrators, **Lakshmi Muralidharan** or **Rachel Chapman**. We are thrilled to have them join our team, and welcome them to ICS. PIs are aware of their assignment to either Lakshmi or Rachel as their go-to person for anything related to grants (e.g., purchasing, hiring, traveling, etc.). Details on specific assignments are on the Grant Administration FAQ webpage.

Jean now manages both CINC and MUEN facilities working with Anna and Tracey and supporting the Academic Programs Director. Cat is overseeing budgets, reporting, and high-level grant management. Ellen is dedicated to payroll functions. Yasko manages the website, newsletters, and other ICS-wide communications.

The take-home message from this post is:

- If you have a question that relates to your research and grant, ask Lakshmi or Rachel.
- If they are not the ones to solve your issue, they know who is and will move your request to the appropriate person.
- All things building related are managed by Jean/Anna/Tracey.
- Most staff are working a hybrid model of from-home and at CINC and MUEN.

Read details about the updates on the website.

CURRENT ICS OFFICE HOURS

Jean Bowen, ICS Office Manager extraordinaire is working hybrid office hours.

- Best way to know her hours is to check her website Person Page or the website Contact Us page.
- Jean is now the contact person for building needs (keys, questions) for both CINC in east campus and Muenzinger on main campus.
- Cat, Ellen, Lakshmi, Rachel, Anna, Tracey, Yasko's office hours are by appointment only.
    - Find their contact information on the website Administration & Staff People page.

WELCOME NEW STAFF!

Lakshmi Muralidharan
Grant Manager
Portfolio 2

Rachel Chapman
Grant Manager
Portfolio 3

ICS OPS, OFFICE & ADMIN NEWS Cont.

STAFF PROMOTIONS

Congratulations!

Cat Latzer promoted to Accountant III

Tracey Parnaby & Anna Redman promoted to Program Admininistrator I

PARKING CHANGES AT CINC

A permit or hourly payment is now required to park at CINC for students, staff, researchers, faculty, and visitors. Research participants have designated free spaces to park.

- Contact campus Parking Services to purchase a permit. Quantities are limited for the CINC lot.

What to tell your research participants about parking at CINC:

- Park in designated Research Participant parking, no need to pay at the meter.
- Research participants with ADA disabled parking placards can park in any ADA spot, no need to pay.
- Placards must be displayed along with a **note saying Research Participant.**

Perimeter spaces in black are free Research Participant parking spaces.

Center area in front of the CINC main entrance is now Visitor metered parking.

Unless otherwise signed as 'Service', 'Loading', or 'Reserved' all remaining spaces are by permit and meter.

NEW GRANTS AWARDED TO ICS

The following grants were awarded to ICS between end of 2020 and August 31, 2021 in whole or in part, ranging from a month to five years in duration, totaling around $17 million.

PI Name (in CAPS) ICS researcher in **bold**	**Sponsor**	**Title of Project**	**# of Years**
BANICH	NIH	Removing and Manipulating Emotional Information in Working Memory: Cognitive and Neural Representations	1
BIDWELL	NIH	Cannabis Breathalyzer: A Feasibility Study with Legal Market Products	3
BIDWELL	Institute of Cannabis Research	Is what you see what you get? A systematic, public health-driven analysis of cannabis product label claims vs. actual cannabinoid content	3
BIDWELL Bryan	NIH / AMC	Dismantling MBRP: Identifying Critical Neuroimmune Mechanisms of Action	2
BRYAN **Bidwell**	NIH	Cannabis Use Among Older Adults: Potential Risks and Benefits to an Aging Population	5
CEKO D'Mello, Vu	NIH	Automated Physiological Assessment of Chronic Pain in Daily Life	2
CURRAN/BIDWELL Hutchison	NIH	ERP Studies of Acute Influences of THC and CBD on Memory Encoding and Retrieval Processes	5
FOLTZ	Internal CU Award	Award from the Office of Data Analytics	1
HIRSHFIELD	NAVY-Aptima	TOME II: Tools for Objective Measurement and Evaluation: Option 2	1
HIRSHFIELD	DOD-Syracuse	Development of a Remote-fNIRS Device for use Under Naturalistic Working Conditions: additional funds	1
MOORE **Eisenberg**	NSF	Inclusively-designed Sensory Extensions for STEM Inquiry Learning	2.5
PENUEL Sumner, Hensen	NCCI	OpenSciEd High School Developers Consortium: Supporting Equity and Building Capacity through Collaborative Science Curriculum Development	3
QUIGLEY Peffer	Internal CU Award	Epistemology (Internal project through the CU Boulder College of Engineering)	1
SKENE	NIH	Genomics, Variation, and Evolution of Cerebellar Circuits Linked to Higher Cognitive Functions in Humans	
WINGERT Penuel	LPI	SA_Formulative Assessment Professional Learning Curriculum	1 mos
PENUEL Sumner, Hensen	NCCI	OpenSciEd High School Developers Consortium: Supporting Equity and Building Capacity through Collaborative Science Curriculum Development	3

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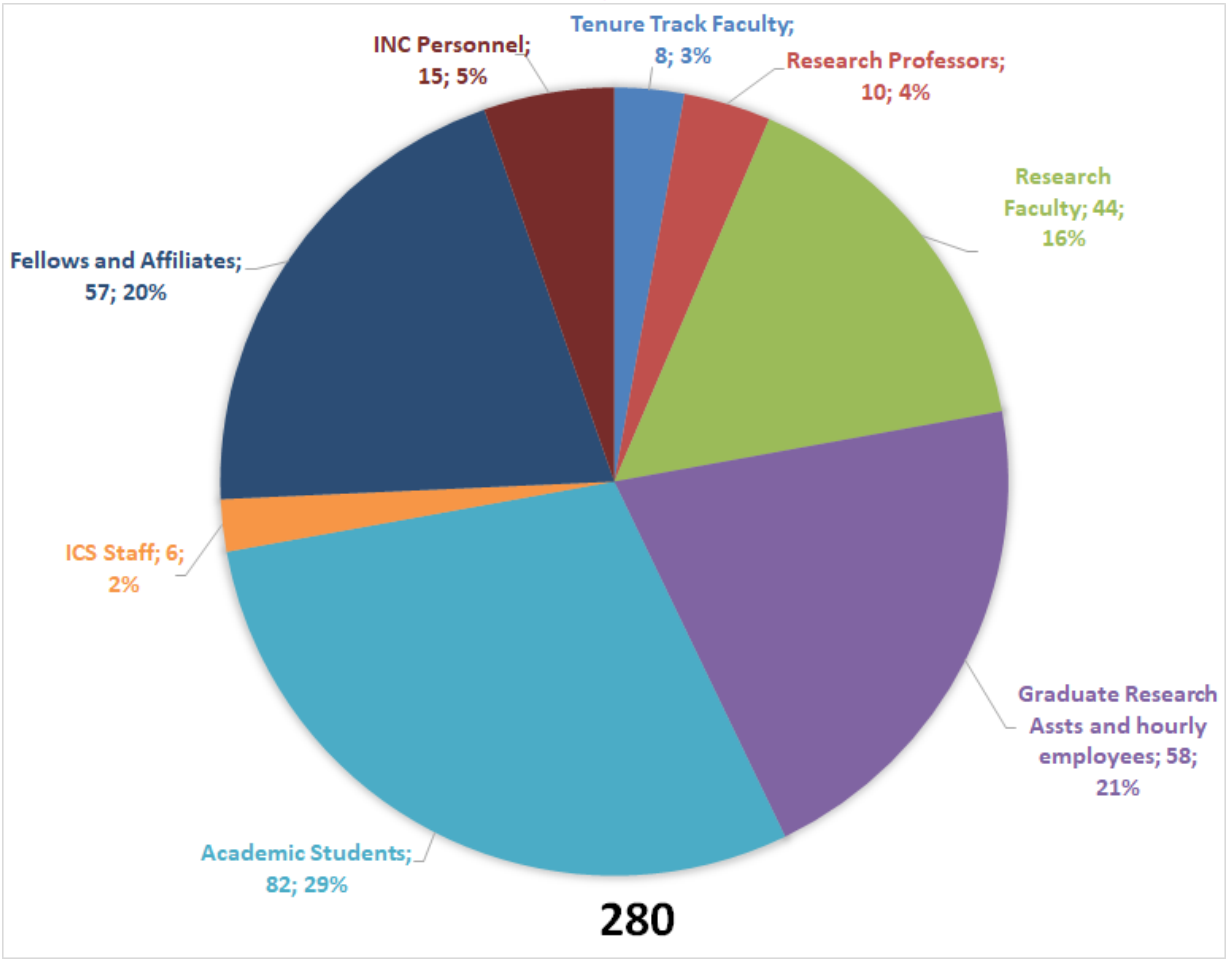
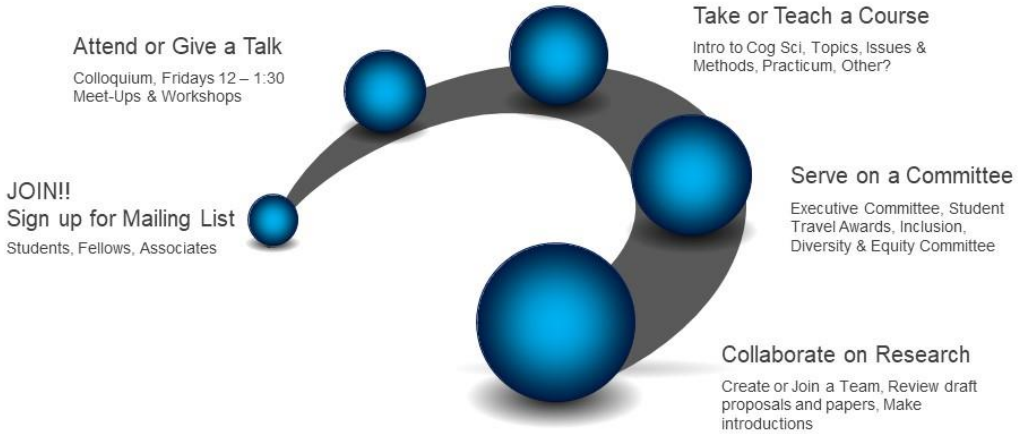
ICS COMMUNITY SNAPSHOT 2021

280 (12% larger than 2020)



WAYS TO GET INVOLVED WITH ICS



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HAVE QUESTIONS? NEED HELP?

NOTE: the ICS offices are currently on a hybrid (virtual & in person) schedule due to COVID-19 and space limitation.

Check the ICS website Contact Us page for the latest schedule.

Jean Bowen
Jean.Bowen@colorado.edu

Donna Caccamise, Associate Director
Donna.Caccamise@colorado.edu

Tammy Sumner, Director
Sumner@colorado.edu

GIVE TO ICS

We need your help to sustain and grow our innovative research studies and initiatives and provide outreach programs to the public. Our Institute is almost entirely funded by research grants and donations.

Your donations are particularly helpful in supporting critical pilot studies that build into larger scale research, graduate students, and early career scholars.

Your donations both large and small can also help the functioning of the following programs:

The ICS General Fund	Supports pilot studies, graduate students, early career scholars.
The CU Reach Fund	Supports Research, Education, and Application in Cannabinoids and Health (CU REACH) multi-disciplinary center to expand the capacity for research, education, and application and become leaders in the study of cannabinoids and health.
The ICS Building Community & Collaboration Fund	Supports research collaboration events and functions associated with recruitment, outreach, and community building.

Donations can also be made to specific programs such as faculty labs, Centers, special projects.

MISSION

Our mission is to identify and address key questions in cognitive science. Through interdisciplinary research and education, we explore the nexus of humans and machines as we seek to understand and extend human cognition, machine intelligence, and fruitful collaborations between the two. Our research builds on artificial intelligence, cognitive neuroscience, human learning, and emotional processing to tackle some of society's most pressing challenges: understanding brain health and wellness, developing personalized therapies and interventions, enhancing and deepening human learning, and optimizing complex cognitive processes to improve human performance and collaboration

VISION

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

University of Colorado Boulder