POSTERS (alphabetically by last name)

1. Masoumeh Abolfathi
University of Colorado - Denver
TGD: TimeGAN-based Wireless Traffic Obfuscation with Adversarial Samples
Web privacy-enhancing technologies have been grown to preserve the users' privacy against traffic analysis (TA) attackers. Existing defense mechanisms suffer form inefficiency or significant overheads. This research work proposes a robust, efficient defense approach called TimeGAN Defender (TGD) to produce adversarial samples against TA adversaries.

2. Alexandra Bejarano
Colorado School of Mines
No Name, No Voice, Less Trust: Robot Group Identity Performance, Entitativity, and Trust Distribution
Human interactions with robot groups are more complex than interactions with individual robots. This is especially true for groups of robots that do not have humanlike 1-1 associations between bodies and identities. We investigate the ways that different robot group identity performance strategies might influence the distribution of trust amongst robot group members.

3. Christina Cole
Colorado State University
Geometry and Topology of ReLU Neural Networks
Weights of a trained ReLU NN decompose the domain into convex polytopes. We present two algorithms that find these polytopes: a brute force method formulated as a LP problem and a sampling method that remains tractable with large NN architectures. Geometric and topological observations are made about the emergent polytopes.

4. Simay Cural
Colorado College
Finding Fake News Without the News: Structural Detection of Misinformation Using Machine Learning
Machine Learning methods for misinformation prediction rely on natural language processing. However, misinformation about novel events like the COVID19 pandemic can be hard to predict because of a lack of training data. We demonstrate proof-of-concept prediction of misinformation based on structural patterns in how tweets spread from user to user.

5. Elita Danilyuk
Colorado State University
PortfoliU Project: How an Open Source Repository can Benefit Computer Science Students
PortfoliU Project is an open-source repository with resources and documentation to help students create their own portfolio webpage which gives students the ability to showcase their skills in a meaningful way. PortfoliU Project is catered for computer science students to get involved in open-source and to learn from their experience.

6. Emily Doherty
University of Colorado - Boulder
Toward Workload-Based Adaptive Automation: The Utility of fNIRS for Measuring Load in Multiple Resources in the Brain
We investigate the utility of functional near-infrared spectroscopy (fNIRS) for workload-based adaptive automation. We manipulated the mental load of a sorting task via working memory and visual perceptual load. Our findings revealed that fNIRS is sensitive and diagnostic to load in complex tasks, and the regions associated with diagnosticity align with neuroscience literature.

7. Sana Fathima
University of Colorado - Boulder
Human Action Recognition using Deep Learning Techniques
Video analysis has potential to touch all aspects of life from learning and communication to entertainment and play. Human action recognition involves analysis of realistic action videos which is a very challenging ML problem. I have tackled this by using Deep Learning Techniques to assign video-level labels by training 13k video clips for 101 categories.

8. Kelsey Hart
University of Utah
Girls Dance Into STEM Careers
Women are minorities in STEM industries. Young women who study dance are more likely to enter a STEM career. Rather than pushing students into rigorous STEM classes where they face the struggles that come with being a minority, they can enter dance: a less intimidating way to learn skills which directly translate to the classroom.

9. Xuan Huang
University of Utah
Distributed merge forest: A new fast and scalable approach for topological analysis at scale
In this paper, we extend a new topological paradigm to the case of distributed computing, where the construction of a global merge tree is replaced by a distributed data structure, the merge forest, trading slower individual queries on the structure for faster end-to-end performance and scaling.

10. Julie Jarzemsky
University of Colorado - Boulder
Integrating Ethics into Computer Science Education
Computer scientists have the power to impact the world around them through the technology they develop. This poster outlines strategies to integrate ethical thinking into computer science curriculum to prepare students to code responsibly throughout their careers.

11. Lin Jia
University of Utah
PATHFINDER: Practical Real-Time Learning for Data Prefetching
Our work shows a relatively small spiking network relies on the STDP algorithm to learn while performing inference - it's a low-cost and local learning algorithm that can quickly observe and react to the current stream of memory accesses. It also can achieve high accuracy in predicting new access patterns.

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12. Serena Kim
University of Colorado - Boulder
Spatial Distribution of Solar PV Deployment: An Application of the Region-Based Convolutional Neural Network
This poster presents a comprehensive analysis of the social and environmental determinants of solar photovoltaic (PV) deployment rates in Colorado, USA. Using 652,795 satellite imagery and computer vision frameworks based on a convolutional neural network, we estimated the proportion of households with solar PV systems and the roof areas covered by solar panels.

13. Emma Law
University of Colorado - Boulder
Cooking with Artificial Intelligence
Artificial intelligence has made its appearance in the food industry streamlining kitchen operations around the world. How is artificial intelligence designed to serve the food industry? My poster will focus on the process of creating AI specifically for the food industry.

14. Anna Little
United States Air Force Academy
Cadet Little's Summer of Quantum
This summer I interned at UMD LPS, working with theory of semi-conducting dot qubits. I optimized calculations in terms of run-time per 3D integral by a factor of 25 (original calculation took 25 times longer than my final result).

15. Ashley Lujan
University of Utah
Short Summer Bridge Programs Can Be Effective at Changing Students Sense of College-Readiness
Many summer bridge programs for incoming students provide coursework and college preparation activities. The School of Computing at the University of Utah ran a two-week bridge program and measured before and after perceptions of college readiness. Results indicate strong improvement in perceived readiness for college and for CS courses.

16. Vista Marston
University of Utah
Lane-Based Large-Scale UAS Traffic Management
The Federal Aviation Administration (FAA) and NASA are developing a new Unmanned Aircraft Systems (UAS) Traffic Management System (UTM). The FAA-NASA UTM requires that all UAS flights must deconflict before flying and never get closer to another UAS by some minimum distance. Using bidirectional lane-based system with roundabouts reduces the deconfliction time.

17. Rachel Masters
Colorado State University
Biomass for Virtual Nature Relaxation
Forest bathing has been identified as an effective way to treat stress and cognitive depletion. Virtual reality forest bathing has similar potential that can reach populations without immediate access to nature. While these benefits are promising, little research has been done on the importance of biomass among other factors.

18. Elizabeth Seero
Colorado College
Developing Requirements for Software Design Meeting Support
Meetings are a central component of software development. Building on our research from last summer tracking the flow of information in a series of design meetings, we developed a set of user stories that will serve as the initial software requirements for a new meeting support tool.

19. Erica Shivers
Imperial College London
The impact of green computing on the environment and computational science
Green Computing involves reducing the environmental impact of technology. That means using less energy, reducing waste and promoting sustainability. Green computing aims to reduce the carbon footprint generated by the Information Technology and Systems business and related industries. In this project we study the long term effects of green computing on the environment and best practices for green technology..

20. James Vongphasouk
Colorado School of Mines
Applications in Edge Computing
The edge computing architecture has developed sectors of nearly every industry like agriculture with IoT sensors monitoring crop health and
soil moisture, or in autonomous vehicles processing the surrounding environment to make smart decisions, all in real time. My poster will discuss the edge computing architecture and its real applications.

21. Jennifer Weber
University of Colorado - Boulder
How to Build a Toddler Lexical Network
We used Word2Vec embeddings trained on a newly-created toddler-directed language corpus to create a lexical network, which better predicted word acquisition from 16-30 months using network centrality measures, compared to a network created using sliding window co-occurrences, as well as networks created by training Word2Vec on typical adult input.