

	Machine Learning		Artificial Intelligence
Overview	<p><u>Machine learning is a subset of AI. That is, all machine-learning counts as AI, but not all AI counts as machine learning.</u> One aspect that separates machine learning from the knowledge graphs and expert systems is its ability to modify itself when exposed to more data; i.e. machine learning is dynamic and does not require human intervention to make certain changes. That makes it less brittle, and less reliant on human experts.</p>	Overview	<ul style="list-style-type: none"> • A branch of computer science dealing with the simulation of intelligent behavior in computers. • The capability of a machine to imitate intelligent human behavior. • A computer system able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.
Opportunities for private and secure Machine Learning¹.	<p>Artificial intelligence techniques to aid with traditional security concerns: Intrusion detection, security policy management, malware detection, etc. This paper will address the flip side of the issue: Using machine learning on sensitive data.</p>	Human Interactive Proof (HIPs)	<p>HIPs have recently been developed to block computers from abusing Internet resources intended for human use. CAPTCHAS- Completely Automatic Public Turing test to tell Computers and Humans Apart.²</p>

¹ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/1460000/1456385/p31-clifton.pdf?ip=157.253.50.50&id=1456385&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518774484_3882cd3e77f3132c2813fbbd7d43718f

² http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/1980000/1971533/p63-al-sudani.pdf?ip=157.253.50.50&id=1971533&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518751214_45c0a3ebf98a6f81e38f5a067301265a

		Cyber Security and Artificial Intelligence³	The two fields have grown closer over the years, particularly where attacks have aimed to simulate legitimate behaviors, not only at the level of human users but also at lower system layers. This talk will cover a bit of the history of computer security and artificial intelligence, identify a few connections between them.
Contextualized project based approach⁴	The goal of Project MLeXAI, Machine Learning Experiences in Artificial Intelligence, is to develop a project-based framework for teaching core AI topics with a unifying theme of machine learning. The objectives are to enhance student-learning experiences in the AI course by implementing a unifying theme of machine learning to tie together the diverse and seemingly disconnected topics in the AI course, to	Infusing critical thinking skills into Artificial Intelligence⁵	Six thinking skills: parts-whole analysis, compare-and-contrast, decision-making, causal explanation, prediction and generalization. In particular, it is shown that critical thinking skills like parts-whole analysis, compare-and-contrast, and decision making can be naturally introduced in the course content of AI.

³ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/1460000/1456391/p51-landwehr.pdf?ip=157.253.50.50&id=1456391&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518774905_eeb45a0009e1f9a2ed99279d4745fa33

⁴ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/2000000/1999881/p368-russell.pdf?ip=157.253.50.50&id=1999881&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518776880_dbec086c9861d6f6d5caaa823c7e6cb

⁵ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/1070000/1067494/p173-rao.pdf?ip=157.253.50.50&id=1067494&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518776556_e58ca3279f53712f7f19a20dd1341440

	increase student interest and motivation to learn AI, and to introduce students to an increasingly important research area.		
MLeXAI: A Project-Based Application-Oriented Model⁶	Their approach to teaching introductory artificial intelligence (AI) unifies its diverse core topics through a theme of machine learning, and emphasizes how AI relates more broadly with computer science. Each project involves the development of a machine learning system in a specific application. By using projects involving real-world applications we provided additional motivation for students. While illustrating core concepts, the projects introduced students to an important area in computer science, machine learning, thus motivating further study.	Enhancing and Augmenting Human perception with Artificial Intelligence technologies.⁷	In this keynote, we will highlight some of the current state-of-the-art results in the field of enhancing and augmenting the human sensation and perceptual processes with applications based on novel transduction devices and artificial intelligence technologies. The presentation will also highlight the emerging trends in these technologies as well as the associated business impact and opportunities.

⁶ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/1830000/1821999/a11-russell.pdf?ip=157.253.50.50&id=1821999&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2Fo60A28848%2E4D4702BoC3E38B35%2E4D4702BoC3E38B35&__acm__=1518777439_2b46126c09fc6d9523ca5dc40771794e

⁷ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/3140000/3130870/p136-bhowmik.pdf?ip=157.253.50.50&id=3130870&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2Fo60A28848%2E4D4702BoC3E38B35%2E4D4702BoC3E38B35&__acm__=1518777894_0155e8f783618288b7a3c4f8ee4cb09a

Learning what to Bid and when to Stop⁸	<p>One of the key challenges of designing a successful negotiation agent is that usually only limited information is available about the other party. Therefore, we need to combine various learning techniques to decide what offers to make, and when to accept. Despite the fact that sharing private information can result in mutual gains, negotiators are often unwilling to share this information to avoid exploitation. This problem can be partially overcome by learning from the offers that are exchanged during the negotiation. What is learnt about the opponent can then be used to improve the decision of what offers to make, and what offers to accept.</p>	Chatbot perceptions and expectations⁹	<p>By understanding how chatbot experiences live up to expectations and how chatbot services compare to alternatives, we can begin to evaluate their performance and purpose. The research objectives include: 1) understand user perception and expectations of chatbots 2) surface preferences for input modality and 3) identify domains where chatbots can add meaningful purpose.</p>
Background / Why is this important	<p>Artificial Intelligence (AI) and Machine Learning (ML) provide a set of useful analytic and decision-making techniques. Within security research, AI/ML components are usually regarded as black-box solvers. Firstly, machine learning, data mining, and other artificial intelligence technologies play a key role in extracting</p>		

⁸ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/2490000/2485255/p1419-baarslag.pdf?ip=157.253.50.50&id=2485255&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518784317_e661dab4a556df2764f46f79d693779e

⁹ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/3130000/3125766/p253-zamora.pdf?ip=157.253.50.50&id=3125766&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2F060A28848%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1518783934_e652054a1ee0a89cfdc0c46d89cc4d1d

knowledge, situational awareness, and security intelligence from Big Data. Secondly, companies like Google, Facebook, Amazon, and Splunk are increasingly exploring and deploying learning technologies to address Big Data problems for their customers. Finally, these trends are increasingly exposing companies and their customers/users to intelligent technologies.¹⁰

Computer technologies and digital recreations have been widely used in the field of Cultural Heritage in the past decade. However, most of the effort has concentrated in accurate data gathering and geometrical representation of buildings and sites. Virtual crowds to predict behaviors in Cultural Heritage applications, hoping to help scholars draw more educated conclusions on unknown matters.

It is a tool that can be used to analyze a problem under different scenarios, test different hypotheses, and result in valid conclusions based on those tests. It allows us to recreate the conditions necessary for the experiment in the form of a computer model and to run accurate simulations that would otherwise be impossible to do by combining this approach with Artificial Intelligence algorithms and techniques, one can, for example, populate long-vanished buildings and sites with virtual actors that behave correctly according to certain rules encoded in their virtual brains. Crowds can be simulated this way, overcoming the intrinsically dead nature of computer reconstructions and making it possible for scholars to study the problem of a site in a new way.¹¹

¹⁰ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/3000000/2990479/p1881-freeman.pdf?ip=157.253.50.50&id=2990479&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2Fo60A28848%2E4D4702BoC3E38B35%2E4D4702BoC3E38B35&__acm__=1518784945_5e5a4bab81d3589213975d60fa26ee29

¹¹ http://delivery.acm.org.ezproxy.uniandes.edu.co:8080/10.1145/1110000/1101408/p109-gutierrez.pdf?ip=157.253.50.50&id=1101408&acc=ACTIVE%20SERVICE&key=4D9619BEF5D5941F%2EF94FA2Fo60A28848%2E4D4702BoC3E38B35%2E4D4702BoC3E38B35&__acm__=1518796616_eo3155aff2c2d5c7f2a0f63cf5fc60f9

