

Artificial Intelligence in New Mexico

Laying the Foundations of a Statewide Alliance

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Establishing a New Mexico AI Alliance



WHAT

Provide a statewide organization focused on **professional development, training, and advocacy** for AI education starting at the K-14 level

“Expanding AI Education – one student, one teacher, one school, one partner at a time”

Inspiration:

- | | |
|--|---|
| <ul style="list-style-type: none">• EdAI• CS Alliance | <ul style="list-style-type: none">• AI4All• CRinCS |
|--|---|

WHY

- AI is a profoundly **disruptive** technology
- Profound impact on **workforce**
- Profound impact on society and **representation**
- Essential problem-solving tools and **skills**
- Lack of **K-12 AI standards**
- Lack of K-12 AI **culturally-responsive** pedagogies
- Lack of suitable **pathways** into AI-enhanced degrees



Establishing a New Mexico AI Alliance: WHY?



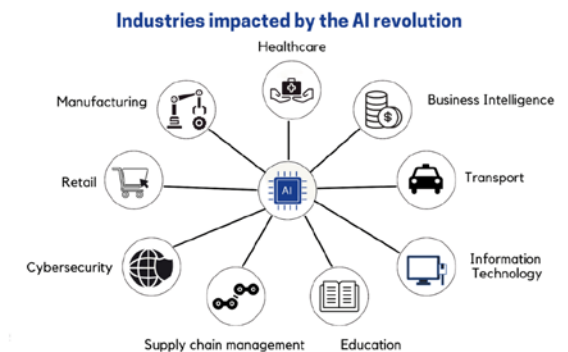
- US AI market is \$11.4 billion in 2019
- Predicted to reach \$266 billion in 2027
- Over 400,000 technology jobs and 71,000 college graduates
- Over 2.3 Million jobs in AI
- Critical gaps in K-14 AI education
 - Convergence of K-12 CS curricula
 - No agreement on K-12 AI curricula
- Gaps amplified by lack of diversity
 - 15% of AI professionals are women
 - 80% of AI faculty are men
 - Less than 7% of UG AI degrees are Hispanic
- World Economic Forum – 1 Billion jobs transformed by AI
 - In May 2023, 5% of job losses caused by AI
 - Women likely to be largely more impacted by job loss due to AI than men (11% vs 9%)
- McKinsey & Co. role of primary education to transition jobs
 - AI education broader than CS or STEM
 - Early exposure, AI as problem solving, experiential learning



Establishing a New Mexico AI Alliance: WHY?



- Impacts across all sectors
 - Military - Smart and “responsible” weapons
 - Medicine - Protein structure determination, predictive modeling through analysis of Electronic Health Records, natural language analysis of social media
 - Transportation - Automated vehicles, navigating complex environments, improved safety, Democratize transportation
 - Education - Personalized education, move beyond one-size fits all, meet students where they are, Democratize access to advanced education and specialized assistance
 - Business - Automating processes, digital marketing, supply chain optimization, utilizing data analysis to make better decisions to strengthen and grow the economy
 - Criminal Justice System - Assess likelihood of future criminal behavior and inform decisions related to parole, probation, or release.
 - Government - Improve quality, efficiency, and outcomes of public service, detect fraud and tax evasion, strategic financial decisions to produce economic multipliers

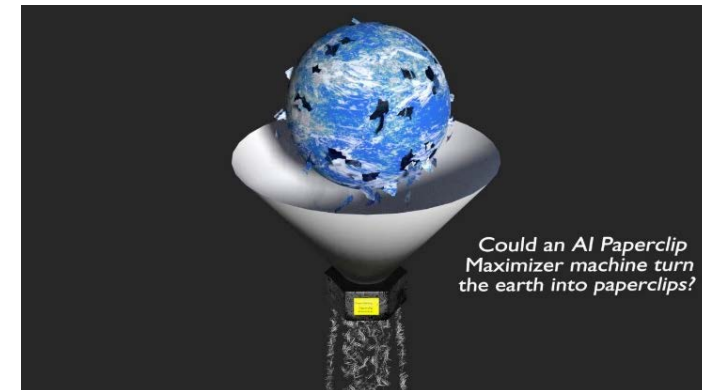
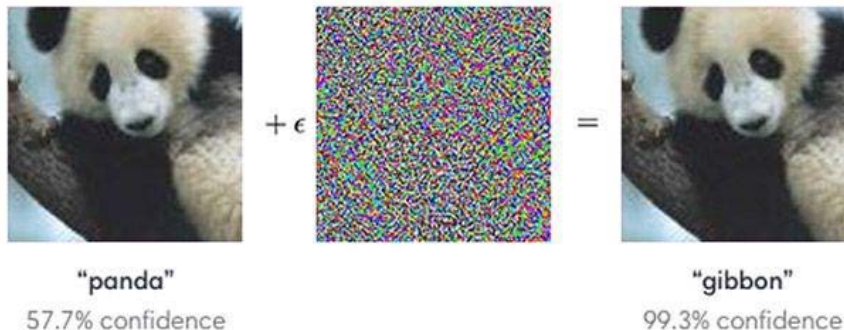


Establishing a New Mexico AI Alliance: WHY?



- Dangers of AI

- Lack of Common Sense
- Lack of Guidelines and Regulations (e.g., moral attribution of responsibility)
- Tension between Automated control and Human control
- Biases
- Privacy and Security
- Explainability and Trust



Establishing a New Mexico AI Alliance



MISSION: to create access and opportunities for all students across New Mexico to quality education and training in foundations, applications, and ethical uses of AI.

VISION: to achieve, by 2030, presence of Artificial Intelligence educational opportunities in the majority of middle and high schools in the state.

NM AI ALLIANCE GOALS:

- Empower New Mexico K-14 teachers in mastering and teaching AI concepts and tools
- Develop a statewide network of educators, researchers, and practitioners to advance AI knowledge in K-14 audiences
- Develop, assess and disseminate culturally-responsive curricula on AI and its ethical applications
- Establish New Mexico as a National Leader in K-12 inclusive AI education



New Mexico State University
College of Arts & Sciences

Curiosity, Collaboration, Self-Expression, Representation

What is AI?



**NM
STATE**
New Mexico
AI Alliance



- Intelligence simulated or displayed by software
 - Intelligent machines that think or react like humans (naive/limiting)
 - Reflect functions typical of cognition
 - Learning, Perception, Natural Language, Reasoning, Decision Making
 - Operating in richly structured spaces
 - May not be human-like (animals are intelligent, transhumanism)
- Deeply tied to mathematics and computer science
 - Roots in ancient times and less ancient mathematics (Leibniz, Descartes)
 - Turing 1950 Computing Machinery and Intelligence
 - McCarthy 1956
- AI integrates knowledge from statistics, computing, engineering, linguistics, cognitive sciences, and psychology
 - Science and Technology
 - Theoretical and Pragmatic





Components of a New Mexico AI Alliance



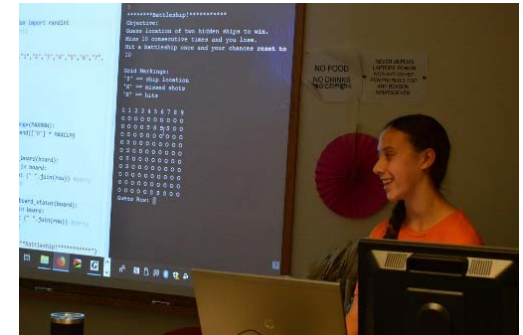
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Establishing a New Mexico AI Alliance: WHO?



- New Mexico is well-positioned to Lead the AI Educational Revolution
- Requires connecting the talent across the State
 - AI Researchers
 - Educational Researchers
 - National Labs
 - AI Practitioners and AI Industries
 - Educational Practitioners and School Districts
 - Research Institutes
- NMSU well-positioned to launch this effort
 - Strong AI Research Portfolio
 - Strong Educational Research Portfolio
 - Partnerships
 - MIT STEP Lab
 - Computer Science Alliance
 - Computer Science Teachers Association
 - Computing Alliance of Hispanic Serving Institutions (CAHSI)



Establishing a New Mexico AI Alliance: HOW?



- Coalesce the community
 - Identify stakeholders
 - Organize stakeholder meetings
 - Form Working Groups
- Formulate AI “Big Ideas”
- Formulate AI Pedagogy for New Mexico
 - Evolve CRinCS to CRinAI
- Launch AI Professional Develop for K-14 Teachers and Instructors
- Develop repository of modules and curricula
- Evaluate, Disseminate, Expand



Establishing a New Mexico AI Alliance: BENEFITS?



- **K-14 Teachers, Instructors and Faculty Members**
 - Develop AI Skills
 - Co-develop AI modules for ANY curricula
 - Own AI skills
- **K-14 Students**
 - AI skills and confidence
- **AI Knowledge**
 - How to effectively provide AI exposure to New Mexican students
 - Talent to advance the state of the art in AI
- **NM Economy**
 - AI talent to meet workforce demands
 - Talent to create a New Mexico AI economy
 - New Mexico as the US leader in K-14 AI education



Building the AI Alliance: Existing Building Blocks (CRinCS)



Culturally Responsive Pedagogy in Computer Science (CRinCS)

Context: Taskforce to develop the New Mexico CS State Plan identified two key areas of need: **teacher PD** and **CS that is inclusive for our diverse population**

NSF-funded grant allowed a coalition of state and national partners to develop the content for a microcredential in Culturally Responsive Pedagogy for CS



Building the AI Alliance: Existing Building Blocks (CRinCS)

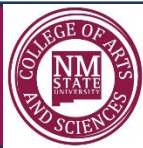


57 teachers from around New Mexico participated in 35 hours of professional development.



Key takeaways:

- Participants grew in their understanding of CRP through the use of pre and post tests.
- Participants submitted lesson plans that addressed CRP and CS standards that were thoughtful and deeply connected to supporting students.
- Teachers are eager for high quality PD opportunities that help them support their students in technical content like CS.
- 80% completion rate



Building the AI Alliance: Existing Building Blocks (CRinCS)



Key takeaways:

- When participant teams from a district are involved, they have a higher commitment to the topic and to each other which can lead to district-wide impacts on teaching and learning.
- CRP connects to AI education by helping to minimize bias of what content is taught and which students get to interact with AI resources.



Building the AI Alliance: Existing Building Blocks (DAILy)



- K-12 AI education in its infancy
 - Very early understanding of how AI concepts are learned and applied
 - Challenges in developing standalone AI courses – Integration as alternative
 - Importance of ethics and biases

Developing AI Literacy (DAILy)

- ✓ Primarily Focused on Middle School Students
- ✓ Curriculum:
 - What is AI
 - Supervised Machine Learning
 - Generative Adversarial Networks
 - AI impacts and careers

AI Methods in Data Science (AIMSinDS)

- ✓ Primarily Focused on High School Students
- ✓ Focused on application of AI methods in STEM disciplines
- ✓ 6-week program
 - Traditional Data Analytics
 - Decision trees
 - Supervised Machine Learning
 - Transfer Learning



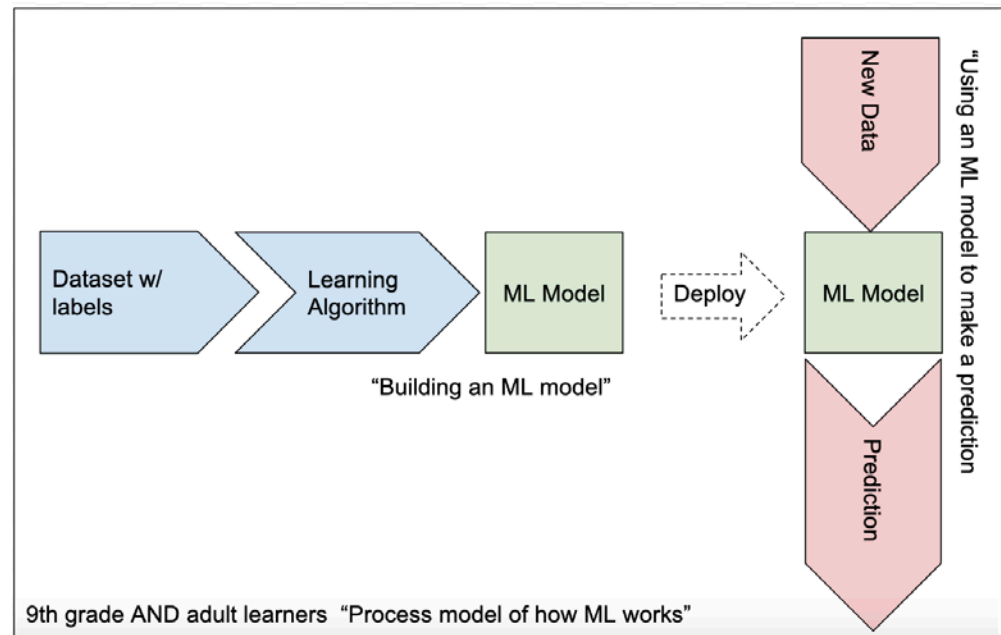
Building the AI Alliance: Existing Building Blocks (EdAI)



Everyday AI (EdAI)

- Framework for AI training of K-12 teachers
- AI Book Club
- Practicums
- Deployment

New Mexico EdAI Pilot



Building the AI Alliance: Existing Building Blocks (Other Efforts)



- AI Undergraduate Concentrations (CS, EE)
- NMSU Applied Machine Learning micro-credentials
- Professional NMSU Master in Data Analytics and Machine Learning
- AIALA
- Exploratory
 - Bachelor of Science in AI
 - Associate of Science with Concentration in AI



What would funding for the AI Alliance Enable?



- Connect stakeholders interested in AI education
- Coordinate development of AI training initiatives across the state and across K-14 grades
 - Leverage existing efforts and knowledge
 - Avoid duplications and competitions
 - Identify “what works”
- Expand DAILY to address needs of high school and 2-year college students
- Expand EdAI to serve high school teachers and community college faculty
- Move towards institutionalization of professional development across the state





THANK YOU



Any Questions?