Artificial Intelligence (AI)

2023 - 2024 Student Board Research Project

FORT HAYS STATE UNIVERSITY

High Plains Farm Credit

What is Artificial Intelligence (AI)?

(AI) - theory/development of computer systems capable of performing tasks that historically required human intelligence

- Recognizing speech, making decisions, and identifying patterns
- Umbrella term for wide variety of technologies
  - (machine learning, deep learning, natural language processing (NLP)
- Common examples of AI in use today
  - Chat GPT, Google Translate, Netflix, Tesla

Brief History of Artificial Intelligence (AI)

First AI program - Logic Theorist (Allen Newell, Cliff Shaw, Herbert Simon)

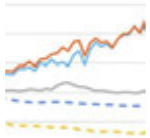
- Program designed to mimic problem solving skills of a human
- Funded by Research and Development (RAND) Corporation
- Presented at Dartmouth Summer Research Project on AI (DSRPAI) in 1956

What changed since then?

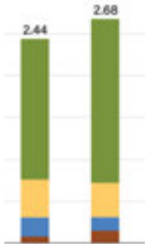
- Fundamental limit of computer storage - no longer a problem
  - Moore's Law - memory/speed of computers doubles every year
    - Finally caught up, surpassed

Advantages of Utilizing AI

Precision Agriculture



Increased Productivity



Resource Optimization

Improved Crop Management

Global Food Security

Predictive Analytics

Automation of Tasks

Disadvantages of Using AI

High Initial Investment

Job Displacement

Long Technology Adoption Process

Environmental Concerns

Data Privacy and Security

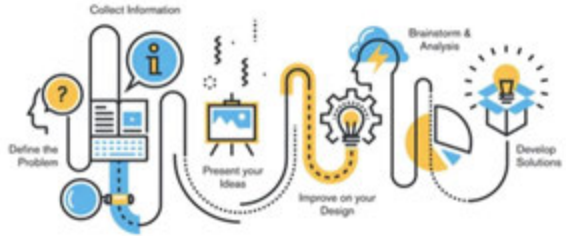
Technological Dependence

Current Uses of AI

Customer Service and Support

Supply Chain Management

Product Development and Innovation



Marketing and Sales

Current Industries Using AI

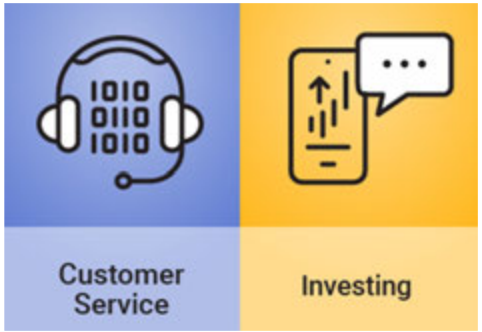
Retail

Healthcare/Insurance

Manufacturing

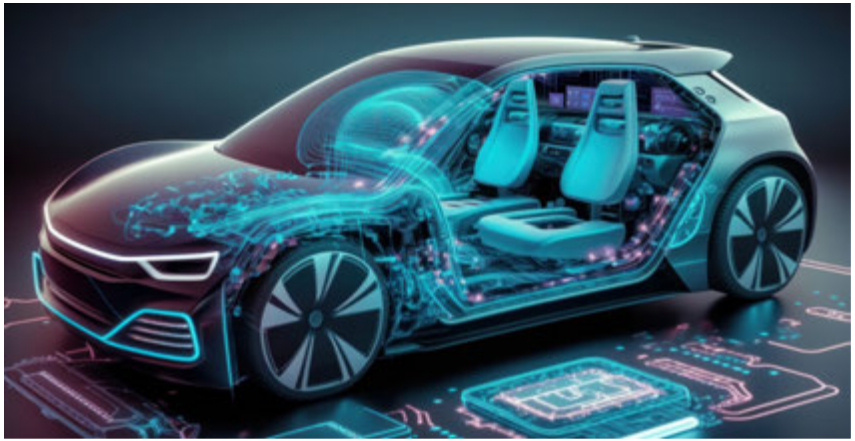
AI in the Finance Sector

- Market Forecasting
- Risk Management
- Fraud Detection
- Portfolio Management
- Wealth Management



Future Potential

- Entirely Endless
  - Education
  - Transportation
  - Finance
  - Law
  - Healthcare



Current Uses of A.I. in Agriculture

- Diagnose Plant Disease
- Automatic Irrigation/Irrigation Leaks
- Sorting Harvested Produce
- Managing Greenhouse Climates
- Weeding Robots
- Self Driving Tractors

The Future of A.I. in Agriculture

- Improvements of current technology
- Move producers away from manual labor
- AI will assist producers, not take their job
- Will continue to become more popular

Importance of Regulation

- Ensuring Responsible AI Use
- Promoting Sustainable Agriculture Practices
- Safeguarding Stakeholder Interests

Regulations and Monitoring (national and global levels for AI in agriculture)

- **Data Protection Laws**
  - General Data Protection Regulation sets standards (data privacy/security)
- **Environmental Regulations**
  - Codex Alimentarius Commission develops food standards/guidelines
- **Standards For Ethical AI Use**
  - Organization for Economic Co-operation and Development (OECD)
- **Monitoring Institutions**
  - USDA, Federal Trade Commission, and international bodies like the Codex Alimentarius Commission and Food & Agriculture Organization

Proposed Regulations: AI in Agriculture - Focus & Impact

Areas Of Focus

- Accessibility and Inclusivity
- Stricter Environmental Standards
- Market Competitiveness
- Guidelines For Regulatory Oversight
- Stakeholder Engagement
- Stakeholder Consultation

Impact

- Equitable Access, Regardless of Resources
- Reduced Environmental Footprint
- Fair Competition and Market Practices
- Compliance to Sustainable AI Practices Benefits All
- Data Transparency Fosters Informed Discussions

Pros for Farmers and Ranchers

Small Operations

- Decreased costs in long run
- Maximize production of each acre
- Monitor livestock if out of town

Large Operations

- Decreased costs (middle - longrun)
- Less employees
- Can monitor large areas quickly to see where to water, spray, fertilize

Cons for Farmers and Ranchers

Small Operations

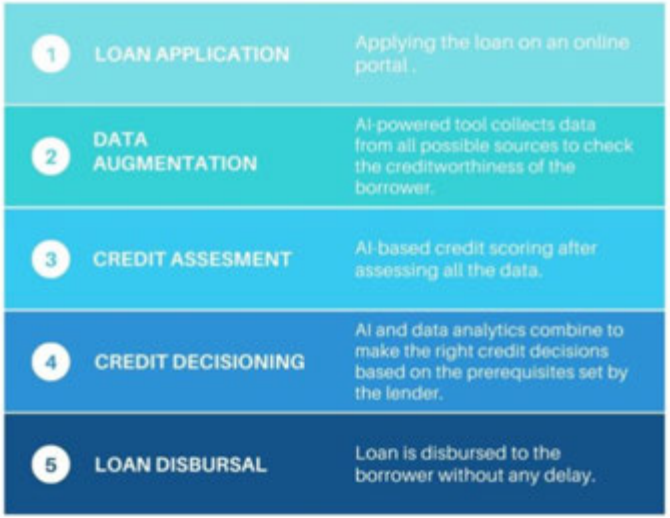
- There are large upfront costs
- Can fall further behind
- Learning curve
- Cyber Security

Large Operations

- Cyber security
- Can get to reliant/grind shutdown

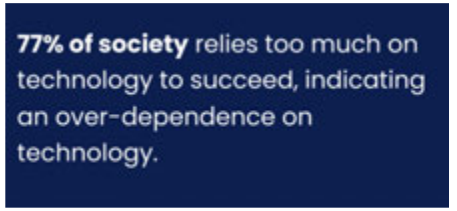
Advantages for Ag Lenders

- Credit Assessments
- Automated Loan Approval
- Precision Agriculture
- Reduce costs by automating certain operations
- Fraud detection and prevention



Disadvantages for Ag Lenders

- Increased reliance on technology and data analytics
  - May require staff training
  - infrastructure upgrades
- Potential concerns about data privacy
- Risk of algorithmic biases or inaccuracies



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