Artificial Intelligence

Merit Badge Workbook

Scout's Name: _____ Unit _____ Date Started_____

Counselor's Name: _____ Phone No.: _____ Email: _____

1. **Key Concepts.** Define the following terms and share the meaning of each with your counselor: (use full sentences.)

artificial intelligence (AI) _____
_____

artificial intelligence agents _____
_____

automation _____
_____

basic programming _____
_____

bots _____
_____

data _____
_____

databases _____
_____

digital workers _____
_____

general AI _____
_____

machine learning (ML) _____
_____

narrow AI _____
_____

superintelligent AI _____
_____

tasks _____
_____

triggers _____
_____

workflows _____
_____

variables _____
_____

2. Artificial Intelligence (AI) Basics. Do the following and share what you learned with your counselor: (use full sentences):

2(a) Identify 10 examples of how AI is currently used in everyday life.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

2(b) Identify 5 examples of how AI is currently used in the workplace.

1. _____
2. _____
3. _____
4. _____
5. _____

2(c) Identify 5 examples of how AI can be used at school or in support of your education.

1. _____
2. _____
3. _____
4. _____
5. _____

2(d) Play 10 rounds of the "AI or Not?" game to determine if the presented scenario utilizes AI.
Give your answer here and why you think so:

2(e) Create a timeline with five key milestones in the development of **artificial intelligence**.

1. Milestone: _____Approximate Date: _____
2. Milestone: _____Approximate Date: _____
3. Milestone: _____Approximate Date: _____
4. Milestone: _____Approximate Date: _____
5. Milestone: _____Approximate Date: _____

3. **Automation Basics.** Do the following and share what you learned with your counselor: (use full sentences):

3(a) Identify 10 examples of how **automation** is currently used in everyday life.
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

3(b) Identify 5 examples of how **automation** is currently used in the workplace.
1. _____
2. _____
3. _____
4. _____
5. _____

3(c) Identify 5 examples of how **automation** can be used at school or in support of your education.
1. _____
2. _____
3. _____
4. _____
5. _____

3(d) Explain how **automation** performs repetitive tasks without human intervention and how it reduces human error and optimizes resources.

_____

3(e) Create a timeline with five significant milestones in **automation** development.

1. Milestone: _____ Approximate Date: _____
2. Milestone: _____ Approximate Date: _____
3. Milestone: _____ Approximate Date: _____
4. Milestone: _____ Approximate Date: _____
5. Milestone: _____ Approximate Date: _____

4. **Ethics in AI.** Do the following and share what you learned with your counselor:
(use full sentences in your answers)

4(a) Research ethical concerns and responsible use in AI, including bias, privacy, and AI decision-making.

4(b) Work through 5 rounds of the "What Would You Do?" ethical decision-making scenarios.
(write up your results here):

4(c) Develop your own ethical guidelines for the use of AI.

4(d) What is the Turing test?

5. **Deepfakes.** Do the following and share what you learned with your counselor:
(use full sentences in your answer)

5(a) Explain what a deepfake is and how it can affect an individual.

5(b) Describe what actions to take if you or someone you know is impacted by a deepfake.

6. **Developing AI Skills.** Do the following and share what you learned with your counselor:
(use full sentences in your answers):

6(a) Discuss the learning process for AI and its limitations.

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6(b) Identify 5 methods of how to effectively communicate with AI.

1. _____
2. _____
3. _____
4. _____
5. _____

6(c) Explain the importance of prompt engineering when using AI to create better output.

6(d) Demonstrate 3 examples of writing clear instructions for a school-related task.

1. _____
2. _____
3. _____

6(e) Complete the "Clear Communication Challenge" activity.
Show evidence of completing this activity to your counselor.

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7. **Practical Application.** Do ONE of the following:

7(a) With your counselor's approval, choose an artificial intelligence project based on your personal interest or a community need. Develop a plan outlining the project's objectives, data requirements, and potential ethical considerations. Implement the project utilizing appropriate artificial intelligence tools, languages, or platforms. Share your project with your counselor. Discuss the steps you followed to create the project and your experience during the process.
(Discuss the steps here, and be prepared to discuss the process you used in class.)

7(b) With your counselor's approval, design a short lesson plan on AI and teach it to your patrol of a group of Scouts. The lesson should include an AI-generated age-appropriate explanation of AI, examples of how AI is used in both everyday life as well as in the workplace, and an interactive demonstration of how Scouts could utilize AI to assist them with a school assignment, Scouting activity, or rank advancement. Share information on the development process and teaching experience with your counselor.

(Send your counselor a copy of your lesion plan, and a note telling your development process and your teaching experience.)

8. **Career Exploration.** Do ONE of the following:

8(a) Identify three career opportunities that would use skills and knowledge in artificial intelligence or automation.

1. _____
2. _____
3. _____

Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

8(b) Interview an artificial intelligence or automation professional. Learn about their day-to-day work, the challenges they face, and their vision for the future of artificial intelligence or automation. Inquire about training, education, certification requirements, experience, and expenses associated with entering the field. Share what you learned with your counselor.