AI Tools in Safety

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Learning Outcomes

- Understand the basics of AI tools, including neural networks and how they predict outputs from weighted inputs.
- Effectively use AI tools in safety analysis to brainstorm failure modes and identify potential hazards.
- Evaluate the ethics of AI use, including issues of academic integrity, confidentiality, and societal impact.

Reading

- Foundations of Spiritual and Physical Safety: with Chemical Processes; Chapter 11

Additional Resources

- Elder Gerrit Gong talk on AI

1 AI is a Regression Model

One of the simplest models is that of a line approximating data points with one input (x value) and one output (y value).

Action Items

1. Use the basic provided machine learning code to fit the relationship for the drag coefficient of a sphere as a function of Reynolds number. See Note 1 for Chapter 11(Guymon, 2025) for tips.

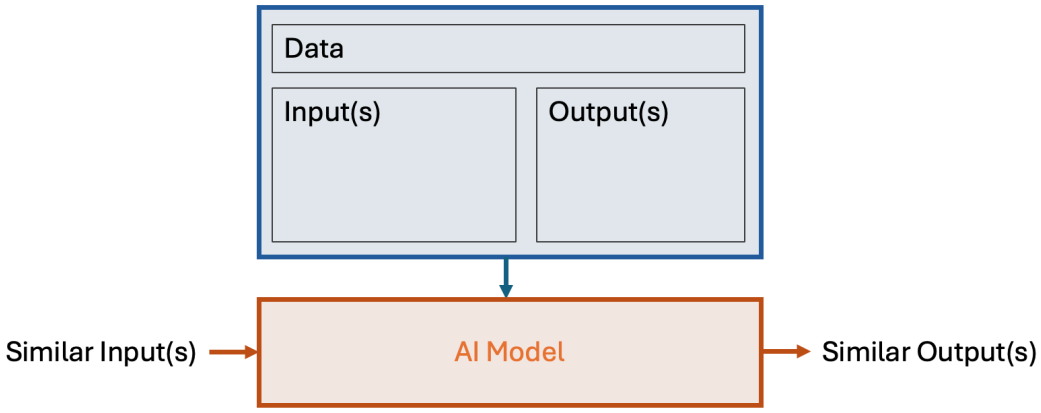

Figure 1: Data is used to generate an AI model which can then predict outputs based on inputs, similar to a regression model.

2. Take a picture of Figure XI.2 and submit the image to an AI chatbot with a prompt about identifying possible failure modes for personal injury when working with a reactive chemical subject to friction, impact, ESD, and thermal initiation scenarios. Compare the list of failure modes to that given in the text (page 290-292). Summarize your findings and thoughts.
3. Personal Reflection: Document three specific things you expect would happen to your critical thinking skills or engineering preparation if you overuse AI.
4. Document three (3) specific things apostles of the Lord Jesus Christ have said about AI use.

References

C. Guymon. *Foundations of Spiritual and Physical Safety: with Chemical Processes*. 2025.