#01 Introduction to AI

Data Analytics and IoT for Smart Logistics

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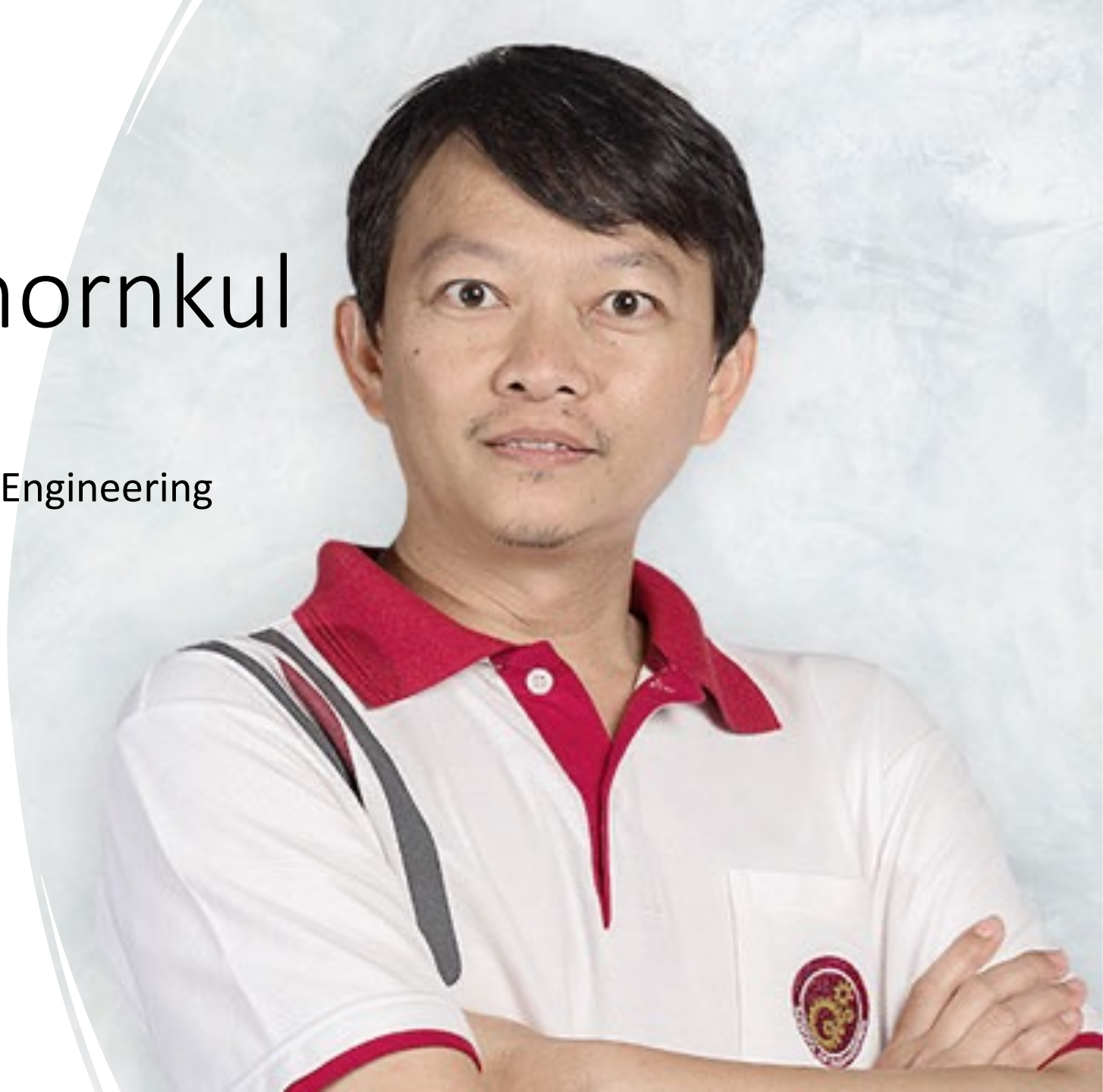

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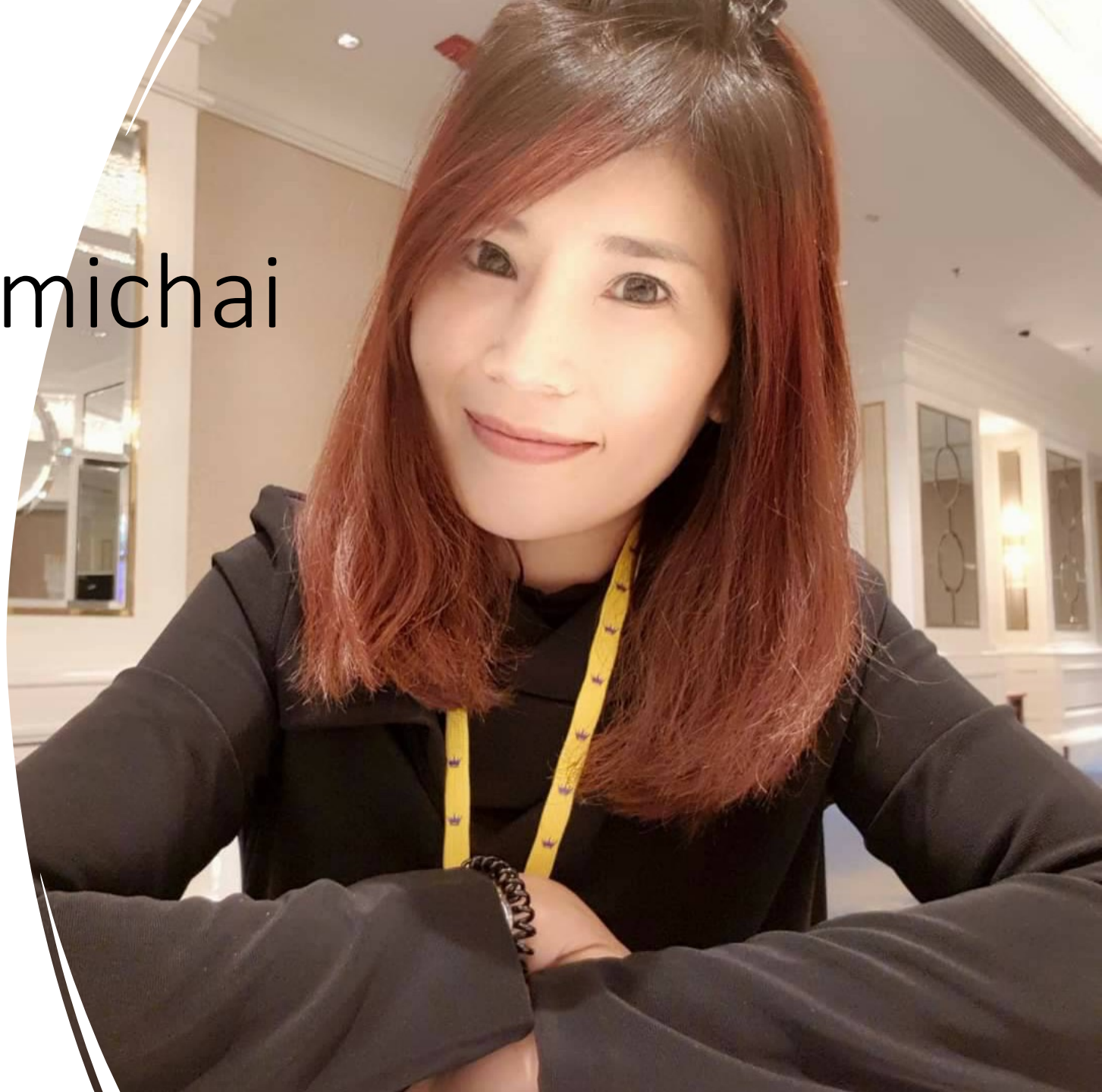

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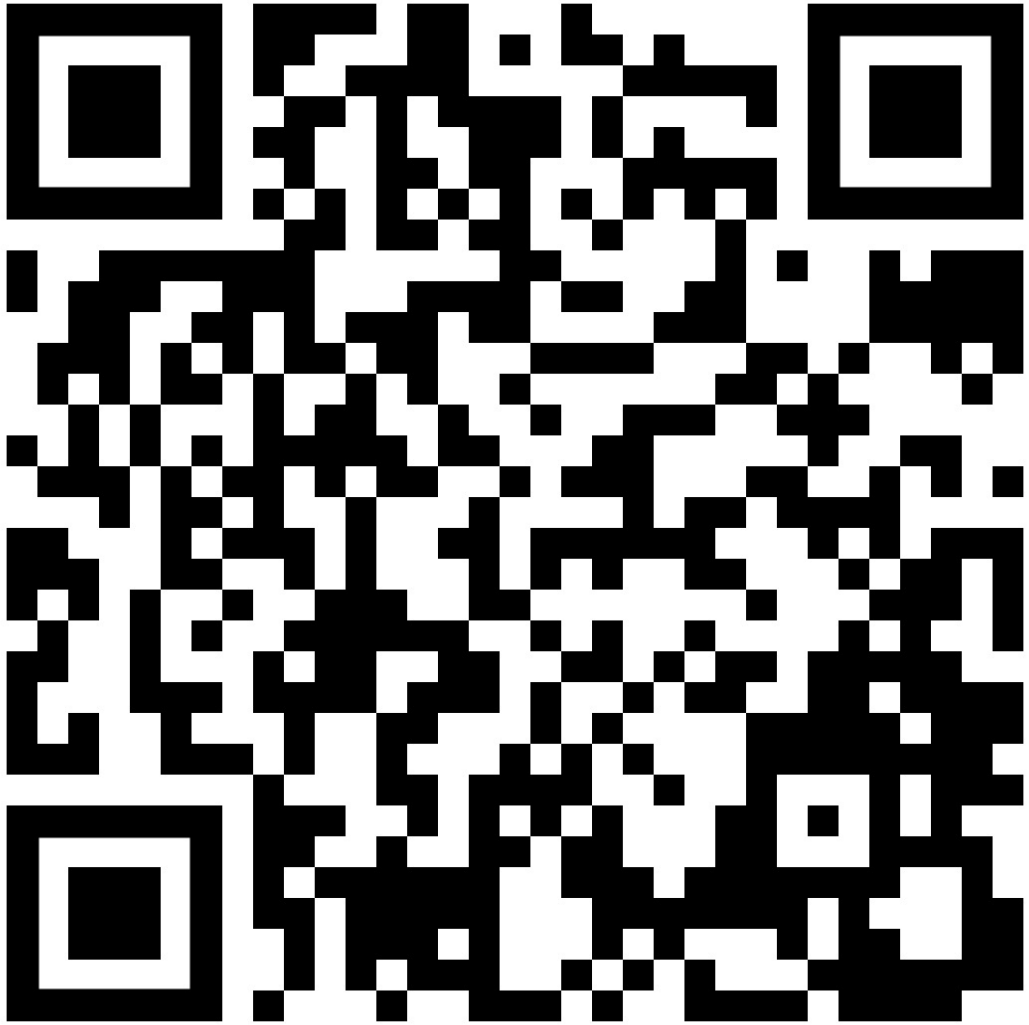
Materials

- Google Classroom:

https://classroom.google.com

- Class Code: yvun3lq



What is AI?

What is AI?

Thinking Humanly	**Thinking Rationally**
"The exciting new effort to make computers think . . . *machines with minds*, in the full and literal sense." (Haugeland, 1985) "[The automation of] activities that we associate with human thinking, activities such as decision-making, problem solving, learning . . ." (Bellman, 1978)	"The study of mental faculties through the use of computational models." (Charniak and McDermott, 1985) "The study of the computations that make it possible to perceive, reason, and act." (Winston, 1992)
Acting Humanly	**Acting Rationally**
"The art of creating machines that perform functions that require intelligence when performed by people." (Kurzweil, 1990) "The study of how to make computers do things at which, at the moment, people are better." (Rich and Knight, 1991)	"Computational Intelligence is the study of the design of intelligent agents." (Poole *et al.*, 1998) "AI . . . is concerned with intelligent behavior in artifacts." (Nilsson, 1998)

Action Rationally

- Rational behavior: doing the right thing, expected to maximize goal.
- Agent (agere [Latin] = to do):
  - Computer Agents:
    - operate autonomously
    - perceive their environment
    - persist over a prolonged time period
    - adapt to change
    - create and pursue goals
  - Rational Agent: a computer agent that acts to achieve the best outcome.
- Caveat: computational limitations make perfect rationality unachievable ==> design best program for given machine resources

Acting Humanly

- The Turing Test (Alan Turing, 1950):

  "A computer passes the test if a human interrogator, after posing some written questions, cannot tell whether the written responses come from a person or from a computer."

- The computer would need to possess the following capabilities:
  - Natural Language Processing (to communicate with human)
  - Knowledge Representation (to store what it knows)
  - Automated Reasoning (to answer questions)
  - Machine Learning (to adapt to new circumstances)
  - Computer Vision (to perceive objects / actions)
  - Robotics (to handle objects / actions)

Topics we will cover…