BT2101 Assignment 2: OLS

# Problem 1: Statistical Thinking

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| Impact of AI robot in the shopping mall | |
| Dependent variable: | **Spending per visit** |
|  | **(1)** |
| AI Robot Exposure Time  (Independent Variable) | 5.563\*\*\*  (1.697) |
| Observations | 89,288 |
| Notes: Spending per visit is represented by dollar. Robust standard errors are in parentheses. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01 | |

# Researchers structure the hypothesis and measure the statistical association between AI robot adoption and spending (spending per visit). They collect the data from one of the biggest chains in Singapore. Specifically, they collect spending per visit and the total time of AI robot exposure by customer. Researchers leverage the OLS model to measure the association between AI robot adoption and spending.

# Based on the table, can we say that AI robot adoption has a positive association with spending? If so, why?

# In measuring the impact of AI robot adoption, is there a potential for endogeneity issue?

# If so, describe two potential endogeneity issues.

# Problem 2: Use Python to solve the problem1 [Soap Height and Weight]

# One argues that there is no association between height and weight of soap; however, others argue that there is a relationship. Structure the hypothesis and make a statistical decision regarding these two arguments. When making a decision, consider the p-value for the statistical significance of the coefficient. Can we say that there is an association between height and the weight of soap? If so, why?

# Problem 3: Use Python to solve the problem2 [MoneyBall]

# Assume that you are Oakland Athletics general manager Billy Beane and want to use statistics to maximize the number of winnings. The coaching team argues that the batting average has an association with the number of winning. Structure the hypothesis and make a statistical decision regarding this argument. As a manager, are you plan to make a contract with a player with has a high batting average? If so, why? Or Why not?