1. The attack named MobilBye targets which type of sensor?

A. Camera

B. Lidar

C. Radar

ANS: _____

A

2. Can an ASIL-D system be composed of multiple ASIL-B subsystems?

A. Yes

B. No

ANS: _____

A

3. In PID control, which term(s) can be used to eliminate steady-state error?

A. P

B. I

C. D

ANS: _____

B

4. True or False: twiddle() for PID controller tuning can be viewed as a form of Reinforcement Learning.

A. True

B. False

ANS: _____

A

5. Why does AlphaGo not use Tabular RL, such as tabular Q Learning or Sarsa?

ANS: the state space is too large.

6. What is the probability of selecting the greedy action (assuming there is only one) in state s in epsilon-greedy action selection, if the total number of possible actions in state s is N?

ANS: $1 - \epsilon + \frac{\epsilon}{N}$

7. What is an Episodic task?

A. A task that has a limited number of actions and then ends.

B. A task with memory

ANS: A

8. Convolutional Neural Networks (CNNs)

Input volume: $56 \times 56 \times 64$ ($W_1 = H_1 = N_1 = 56, D_1 = 64$). 32 $1 \times 1 \times 64$ filters ($K = 32, F = 1$) w. stride $S = 1$, no pad $P = 0$. Show the formulas and calculation process.

    1) Calculate the dimensions of the output volume, including spatial size and depth.

    2) Calculate the total number of parameters, including weights and biases.

ANS:

Each activation map:

Spatial size: $W_2 = H_2 = N_2 = \frac{1}{S}(N_1 + 2P - F) + 1 = \frac{1}{1}(56 - 1) + 1 = 56$

Depth: $D_2 = K = 32$

Output volume:$56 \times 56 \times 32$

No. params: each filter has $1 * 1 * 64 + 1 = 65$ params, so 32 filters add up to $65 * 32 = 2080$ params