

# Artificial Neural Networks & Deep Learning

HW #4

# Q1: Colorization with U-net

## (2 points)

- ▶ You're going to do colorization example over CIFAR10 dataset in the U-net slides.
- ▶ Use the data class code (U-net(2).pdf, slide 10).
- ▶ Use the code in the U-net class code (U-net(1).pdf).
- ▶ You don't have to change any parameter of the example code.
- ▶ Show your codes (1 point)
- ▶ Learn the model, and show the results like the example slide (U-net(2).pdf, slide 16, 1 point)

## Q2: Colorization with a deeper U-net (2 points)

- ▶ Can you add one more downsampling encoding block (i.e. One more encoding with the conv function)
  - The number of filters will be doubled for every downsampling.
- ▶ Show your codes (1 point)
- ▶ Learn the model, and show the results in the format of the example slide (U-net(2).pdf, slide 16, 1 point)

# Q3: Colorization with SCAE

## (2 points)

- ▶ Let's try a different structure, SCAE.
- ▶ Change the U-net class. Just cut-off skip connections, and related concatenation.
  - Hint. You should modify deconv\_unet function.
- ▶ Show your codes (1 point)
- ▶ Learn the model, and show the results in the format of the example slide (U-net(2).pdf, slide 16, 1 point)

# EQ1: Colorization with deeper U-net (1 point)

- ▶ Extending Q2, can you add more downsampling encoding blocks infinitely?
- ▶ If not, why?

# Deadlines & Submission

- ▶ Total scores: 6 points +1 extra point
- ▶ Due: June 11. 2021. 11:59 PM (Friday)
  - No grace period.
  - Be punctual, 1 day delay = 1 point penalty.
- ▶ How to submit
  - Use Blackboard's assignment tab.
  - 블랙보드(kulms.korea.ac.kr) -> assignments 탭에서 제출
  - No email submission. (이메일 제출 안 받습니다. )
  - 주어진 템플릿 파일 사용해서 리포트 작성.
  - 사용하신 모든 코드를 압축해서 제출해주세요. 문제번호별로 파일을 만들어서 제출해주세요 (예를 들어 hw4\_Q1.py, hw4\_Q2. py 같이) 압축파일 이름은 hw4\_codes.zip으로 해주세요. 코드를 제출 안 하시면 숙제 점수는 0점입니다.