BE530 – Medical Deep Learning

– Class Overview –

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What we cover …

- **인공신경망 이해를 위한 기본적 이론**
- Convolutional Neural Network (CNN) 동작 원리
- **대표적 CNN 소개**
- CNN 기반의 객체 검출 및 분할
- **영상 분할을 위한 Loss Functions**
- Generative Adversarial Network (GAN) 동작 원리
- **의료영상 분석을 위한 딥러닝 최신 기술**

Class Schedule (Tentative)

Week	Topics to cover	Project/Assignment
1	Class Overview & Introduction	
2	Artificial Neural Networks	Term Project List-up
3	Convolutional Neural Networks	
4	CNN Optimization	
5	Performance Metrics	
6	Representative CNNs	
7	Object Detection and Segmentations	Mid-term
8	Research Paper Seminar (1)	Term Project Status Report
9	Research Paper Seminar (2)	
10	Research Paper Seminar (3)	
11	Research Paper Seminar (4)	
12	Research Paper Seminar (5)	
13	Research Paper Seminar (6)	
14	Research Paper Seminar (7)	
15		Term Project Presentation

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Term Project

- ■ Topics
  - The topic can be picked up autonomously but it should be approved
  - The potential topic(s) of the term project will be given
    - – probably end of March

- ■ You will work as a team or individually
  - Team member: 2 students
    - – one graduate student + one undergraduate student

- ■ Grading
  - Simple execution of existing techniques: 10 out of 100 points
  - However, proposing a new idea by combining existing techniques will be given full credits

Research Paper Seminar

- **Presentation Time**
  - 25~30 min.
- **Reading List**
  - Will be given by end of March or early April
- **What to present?**
  - Do's
    - Present the problem(s) that authors want to address
    - Present key points (core aspects) of the proposal
    - Present the differences between previous works and the proposal
    - Find out the (potential) weakness of the proposal and propose your idea

  - Dont's
    - Do not spend too much time on the background (e.g., introduction part)
    - Do not just write down what authors wrote down. Instead, understand their work and prepare your slides

Grading (Tentative)

- Term project – **50%**
- Research Paper Seminar – **30%**
- Degree of class participation – **20%**
- Class Attendance
  - The class starts at 9:10AM
  - If you are to be absent, report your schedule in advance
  - More than 4 absences → F / Non-pass