

Deep Learning for Classification of Non-Small Cell Lung Cancer histologic subtypes

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Deep Learning Day 2017

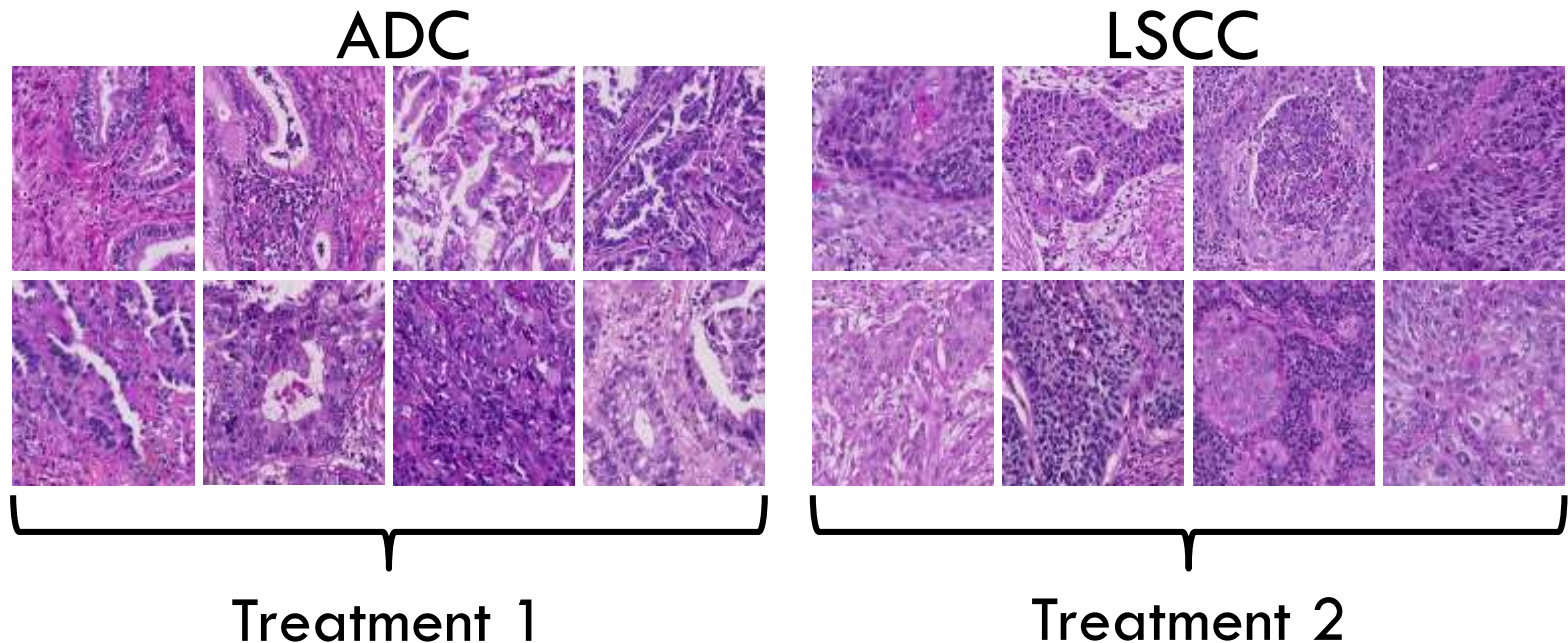
Spotlight talk

Elvis Murina

22.09.2017

Problem

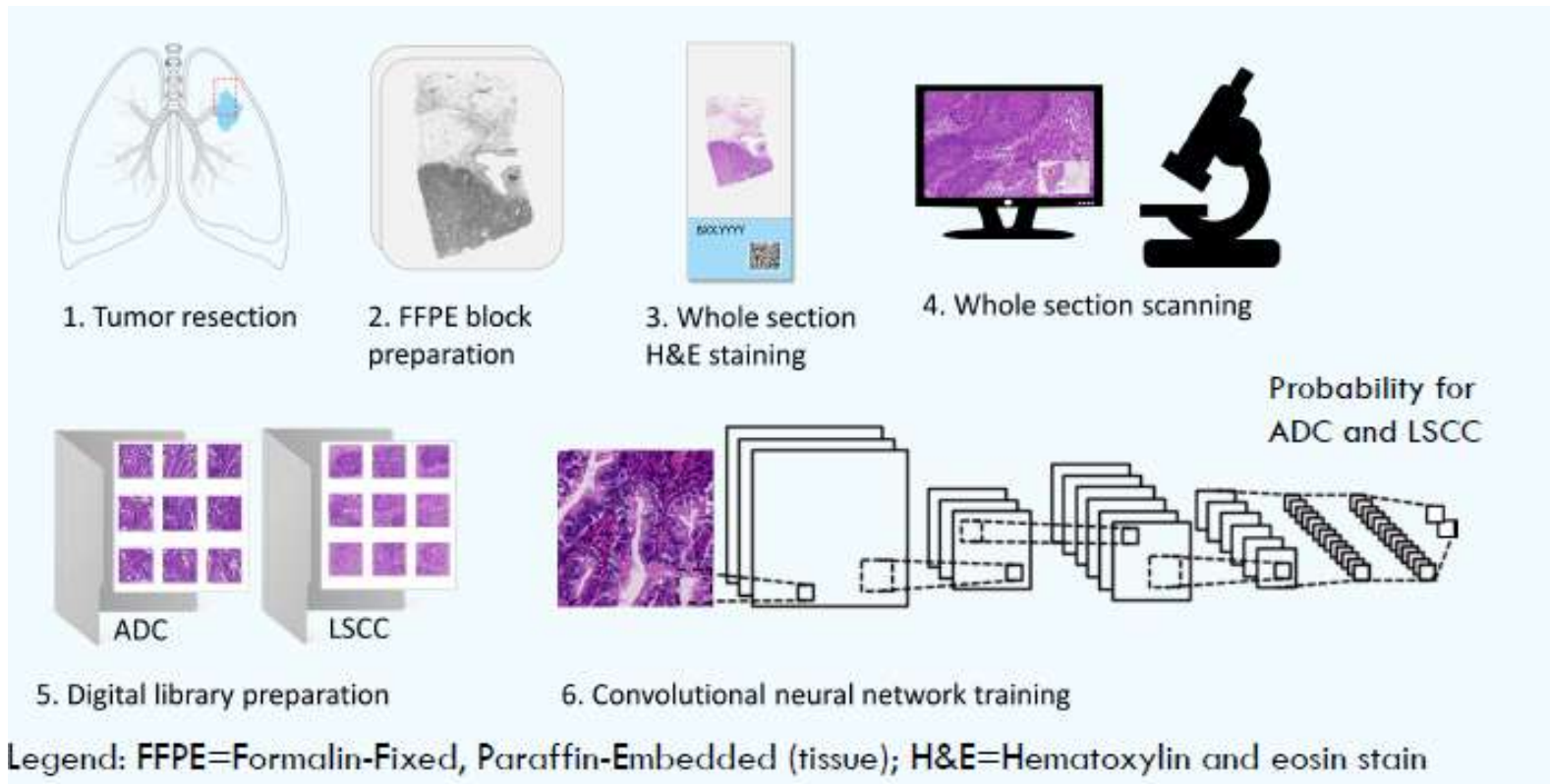
- Non-Small Cell Lung Cancer (NSCLC) is the main lung cancer type
 - ▣ Two main histologic classes: adenocarcinoma (ADC) and squamous cell carcinoma (LSCC)



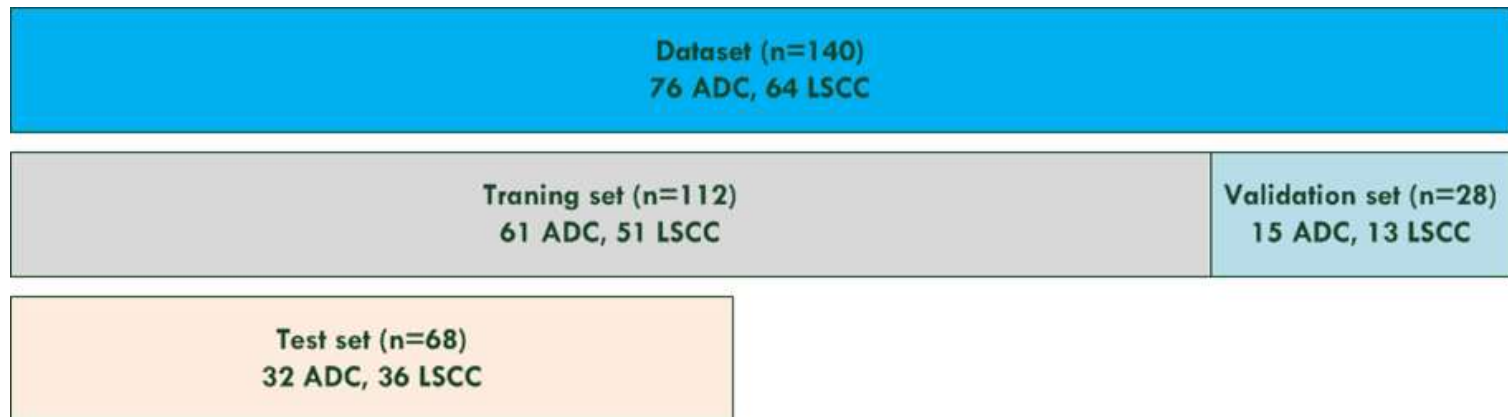
State of the art

- ADC and LSCLC can be often distinguished by trained pathologists by visually checking histologic slides in an optical microscope
- In more difficult cases that are not so clear, they need to do further tests for a decision

Workflow



Data



- 50 images per patient (total 7000 images)
- Blinded testset of 68 patients
- Validation and testset were not used for the training of the network

Goal

- Develop a CNN that can help (speed up) the pathologists with this classification task and has a comparable performance to pathologist with years of experience



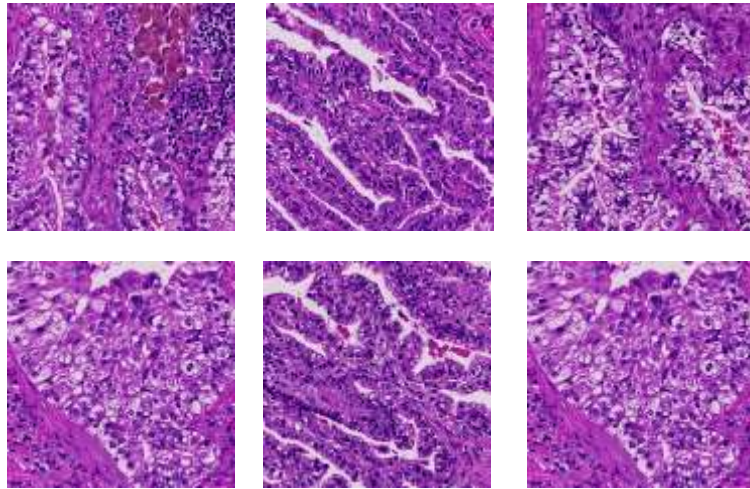
Let's play neural network

- Train our neurons in the brain with labeled data
- Predict new unseen and unlabeled data

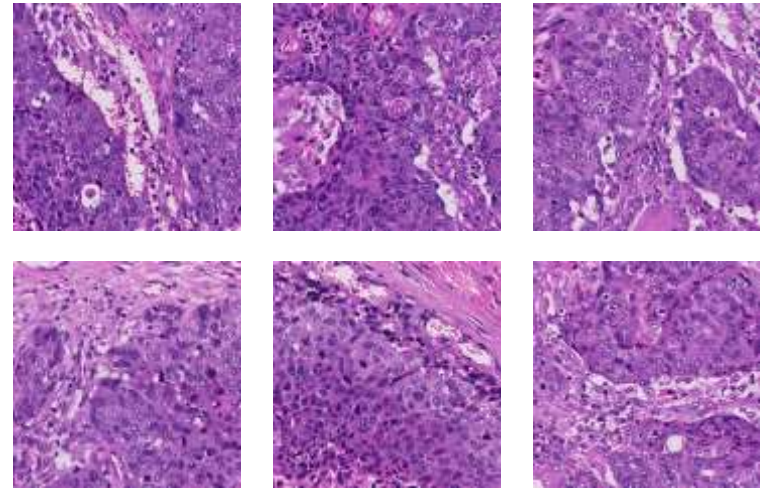
Let's play neural network

□ Training:

ADC

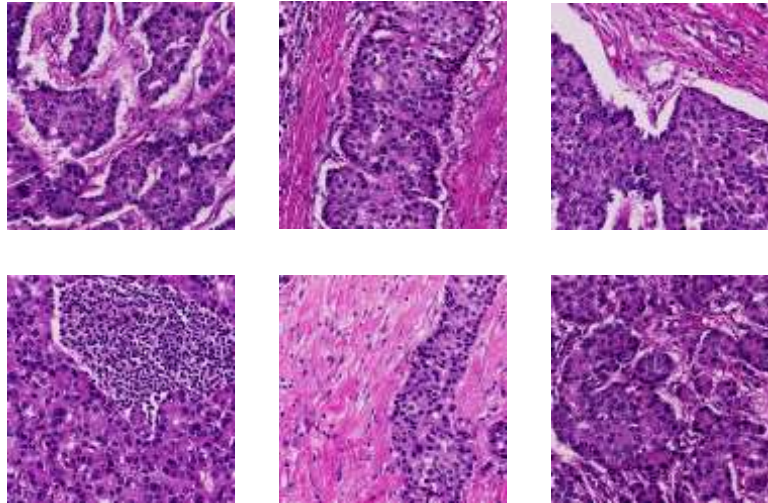


LSCC



Let's play neural network

□ Predicting:

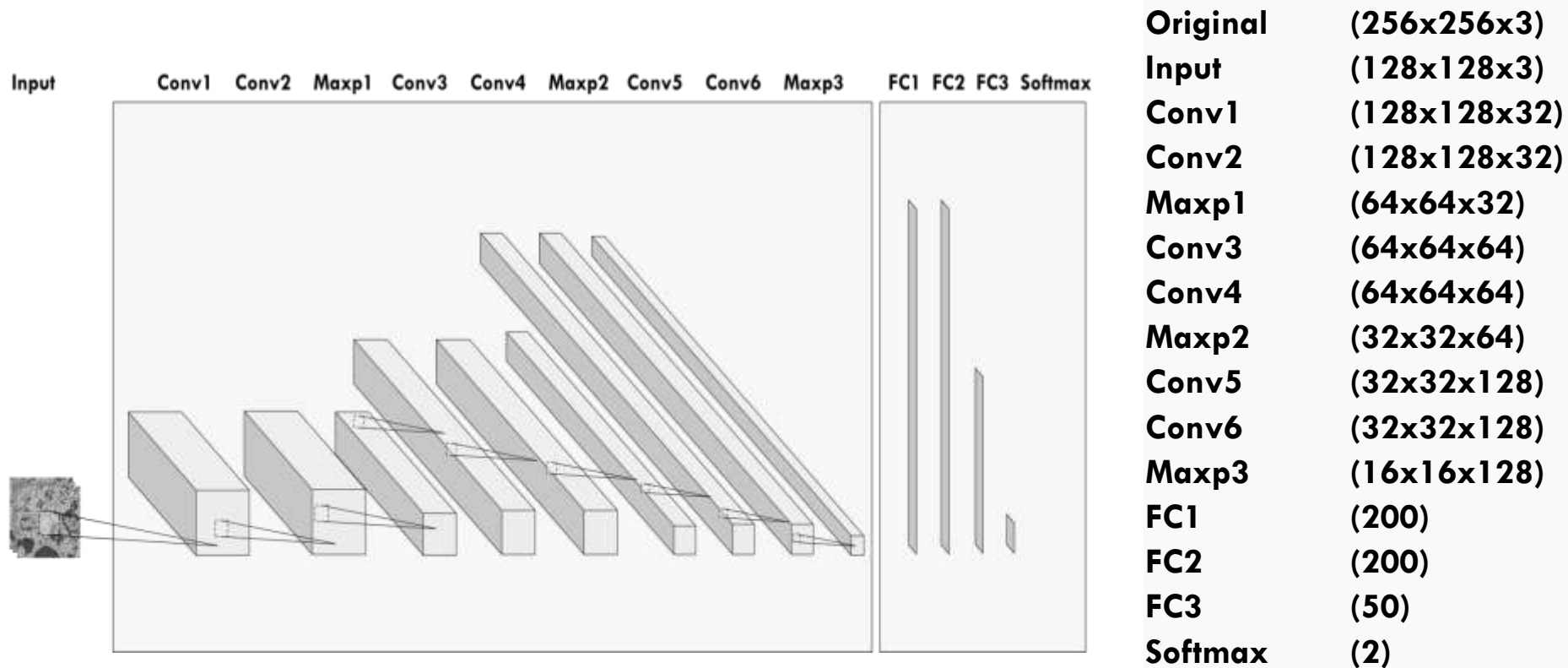


ADC
LSCC



It's ADC
(difficult case)

Network architecture



Results

