Department of Computing

Imperial College of Science, Technology and Medicine

Introduction Lecture

Contains the Quiz for this weeks lecture. Otherwise, the slides are pretty good references for content. This week's paper is [1]

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1 ReadMe

For main things mentioned about CNN go to `deep-learning/Notes/L01/lecture.pdf`

2 Quiz

2.1 Your model performs well on the training data but the validation error is high. This might indicate:

- High bias
- **High variance**

2.2 In which case might acquiring more training data help

- High bias
- **High variance**

2.3 How can we potentially fix high bias?

- **Add features**
- Remove features

2.4 How can we potentially fix high variance

- **Increase regularization**
- Decrease regularization

2.5 Logistic regression is a

- **Linear model**
- Non-linear model

2.6 L1 regularization favours

- Small coefficients
- **Few non-zero coefficients**

2.7 How many paraeters does a logistic regression model have where raw pixel values are used as input features fro images fo size 16×16 pixels?

257

2.8 Convolutional filters are translation

- Invariant
- **Equivariant**

References

[1] Andre Esteva et al. “Dermatologist-level classification of skin cancer with deep neural networks”. In: *Nature* 542.7639 (Feb. 2017), pp. 115–118. ISSN: 1476-4687. DOI: 10.1038/nature21056. URL: https://doi.org/10.1038/nature21056.