# Convolutional neural networks for classification of transmission electron microscopy imagery

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# Introduction

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# Performance measures

## The Accuracy Paradox

Models with a given accuracy may have greater predictive power than models with higher accuracy.

## Confusion matrix

| | Predicted True | Predicted False |
|---|---|---|
| Actual True | True Positive | False Negative |
| Actual False | False Positive | True Negative |

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## $F_1$ score

It is a harmonic mean of TPR and TNR

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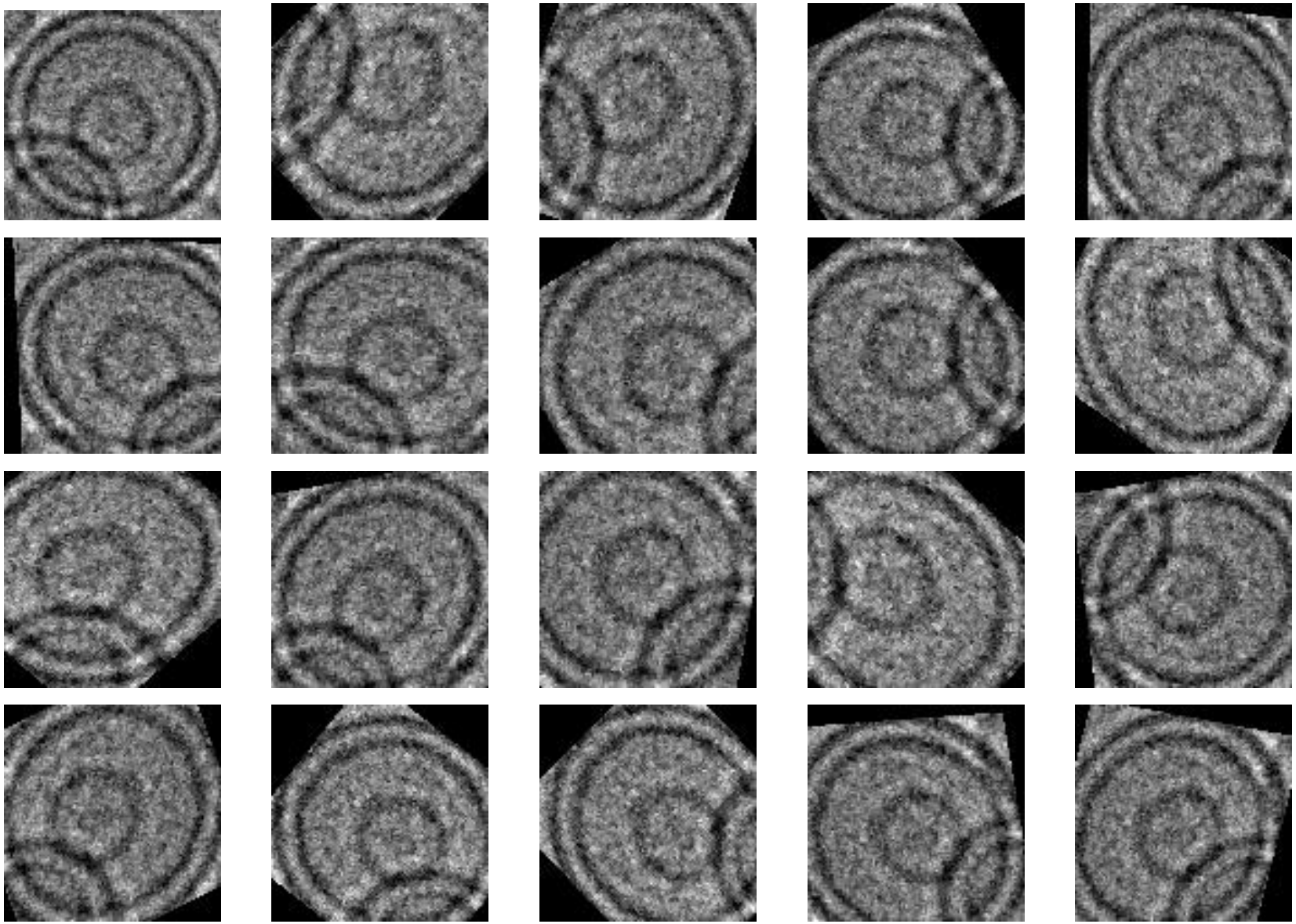
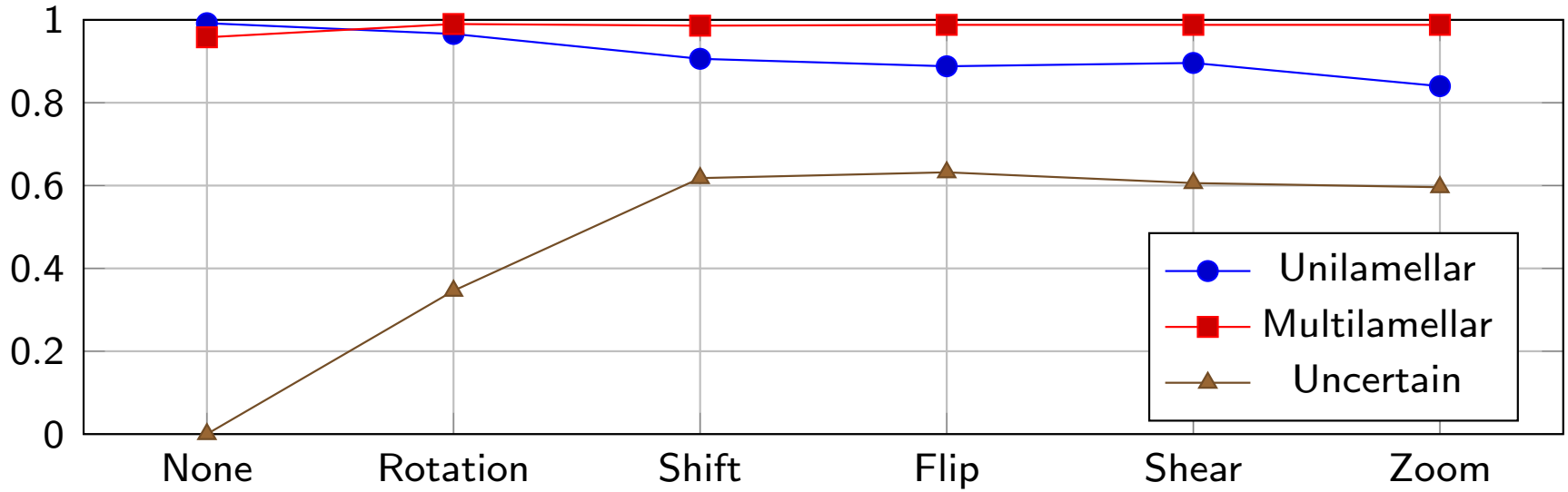
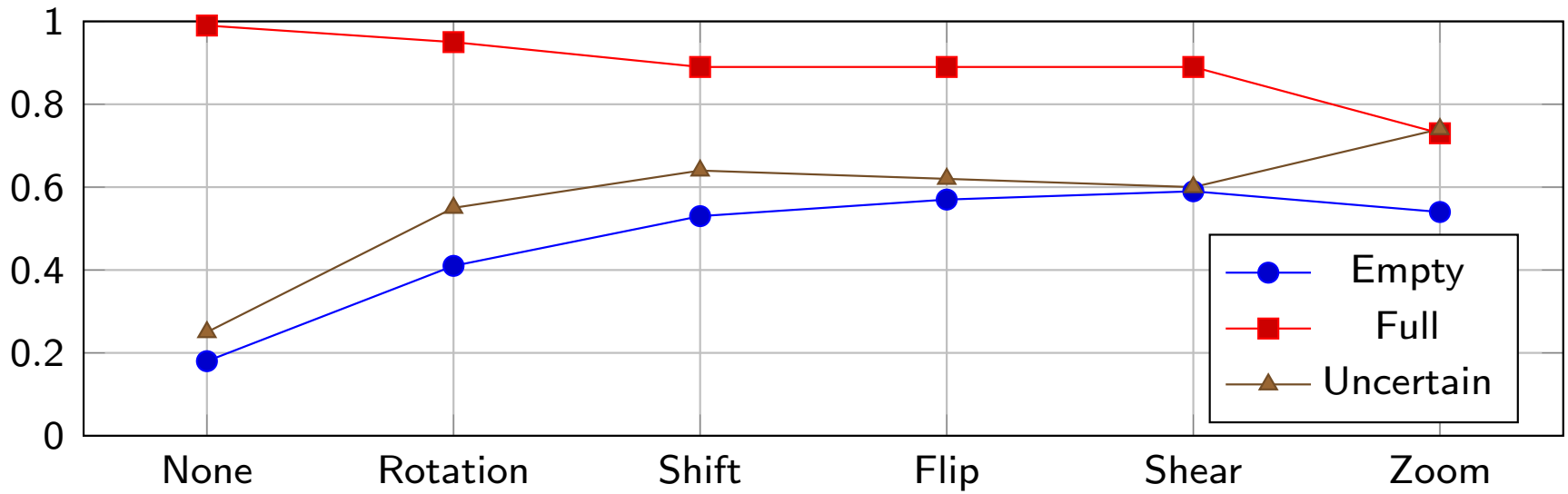
- Vertical flip

# Data augmentation example

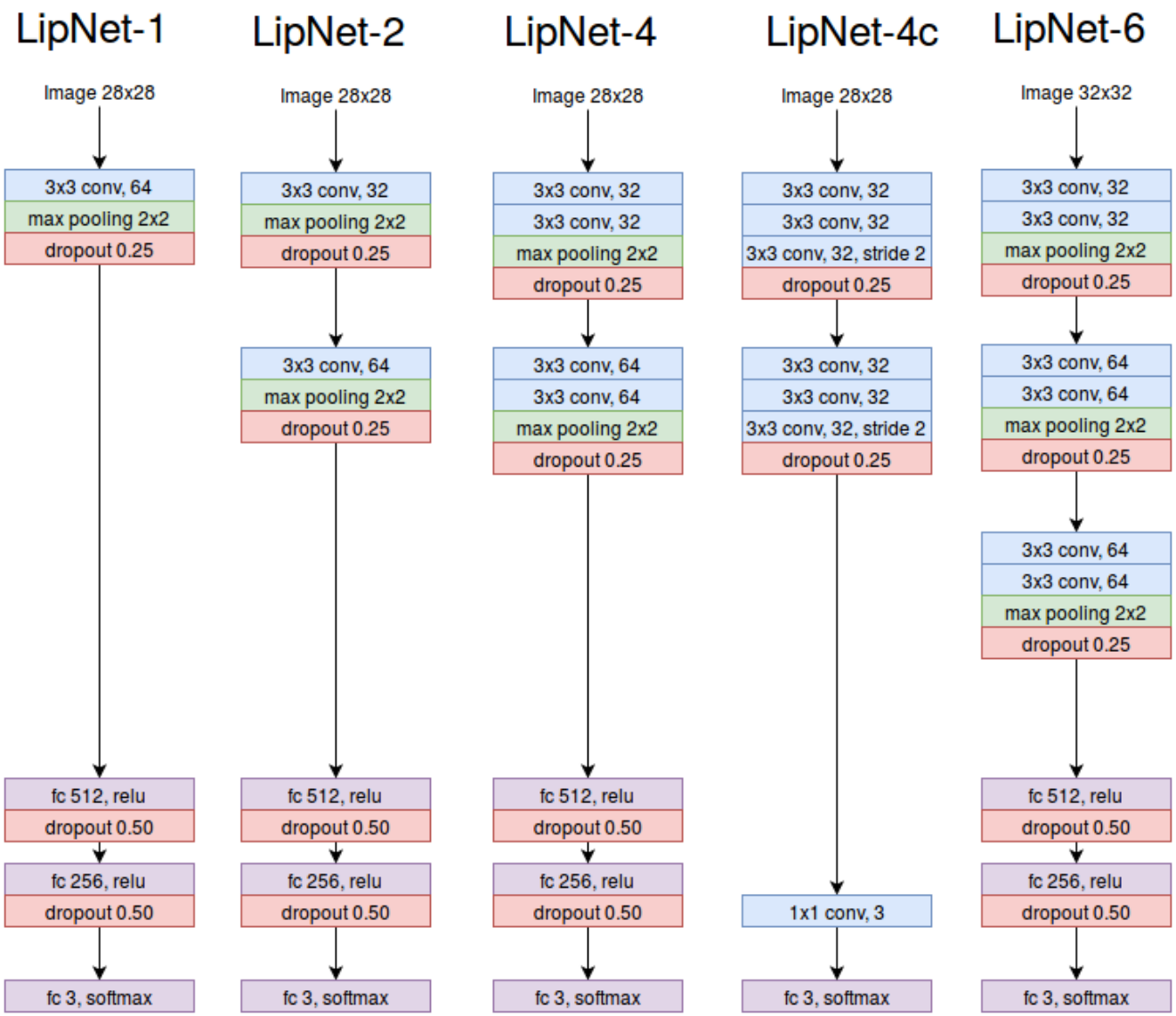


# Effect of the data augmentation

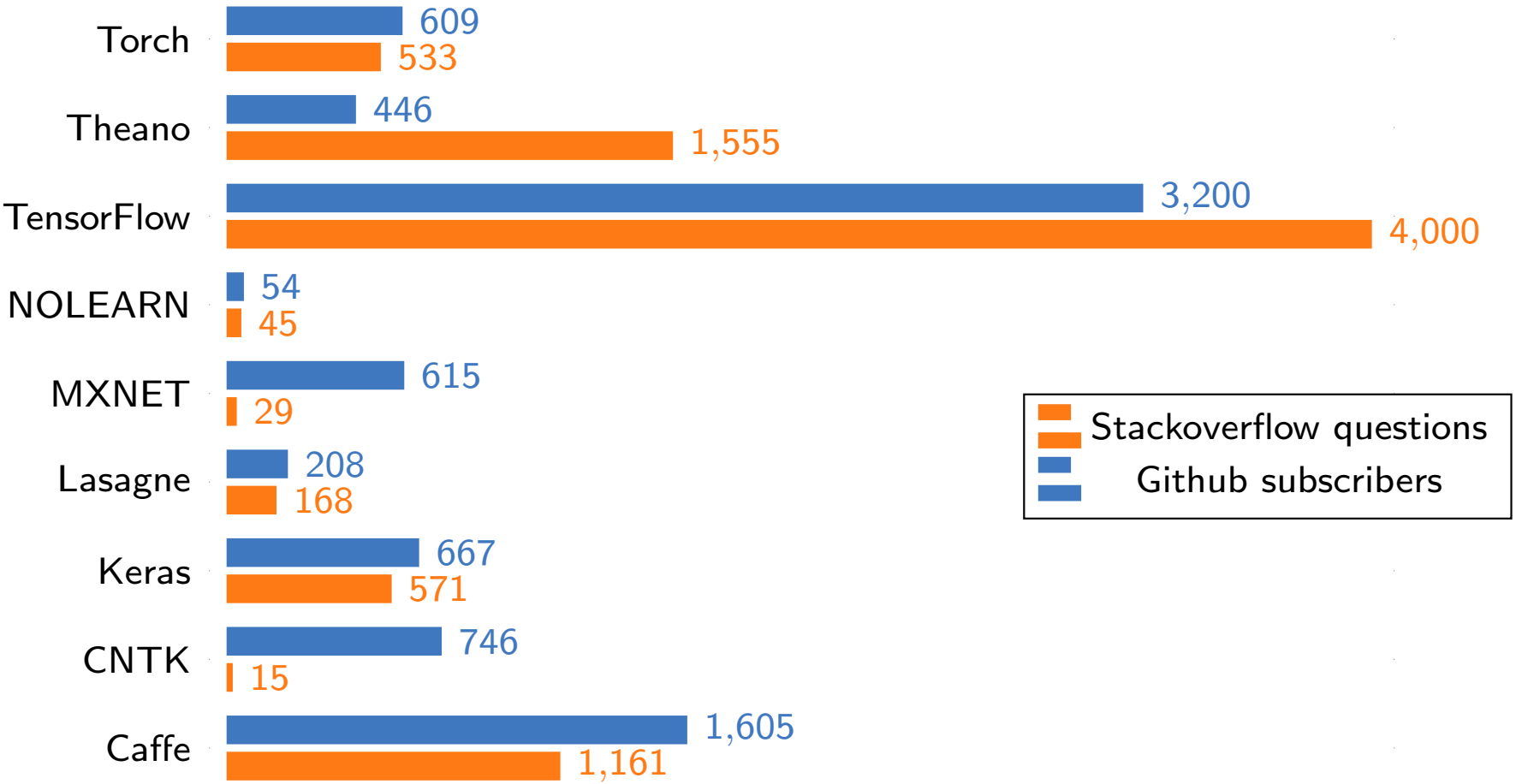


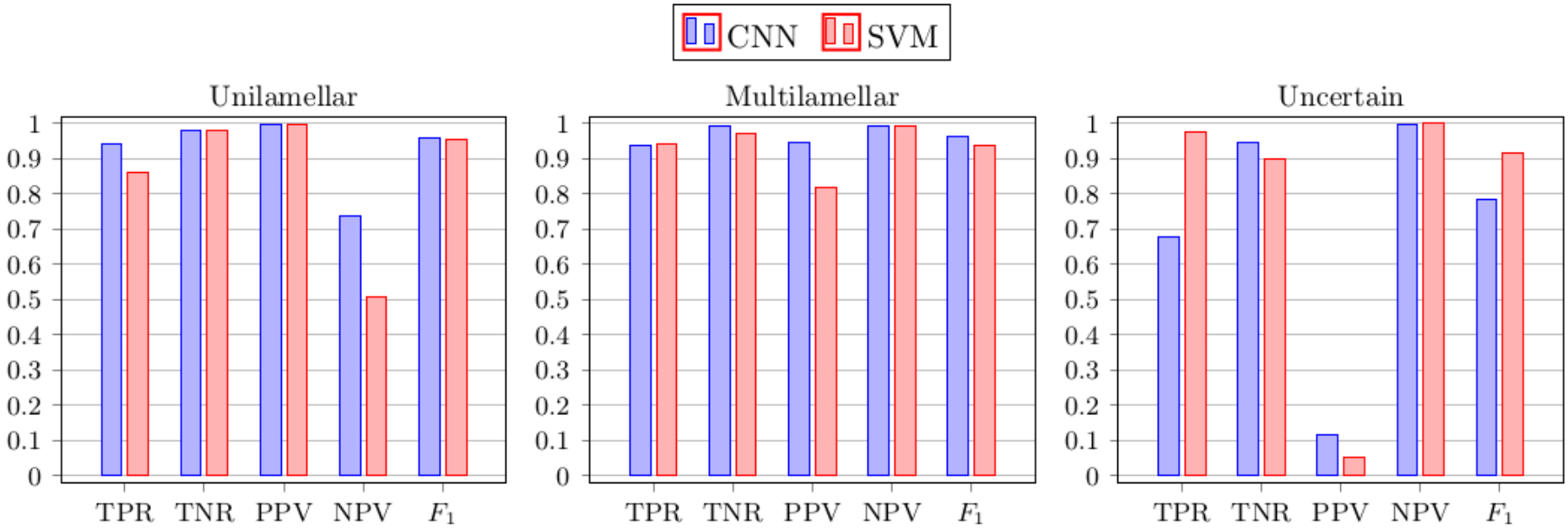
# Network architectures



# Popularity of deep learning software as of October 2016



# CNN vs SVM: Lamellarity



# CNN vs SVM: Encapsulation