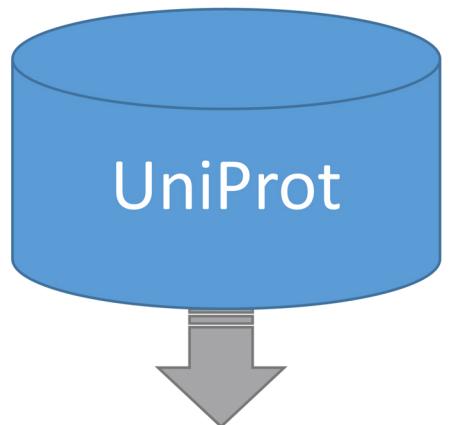


## Data collection



| Independent    | Cross-validation |
|----------------|------------------|
| 38 SNAREs      | 644 SNAREs       |
| 349 non-SNAREs | 2234 non-SNAREs  |

## Feature extraction

PSSM

| A | R          | N           | D     | C          | Q           | E   | G    | H    | I    | L    | K    | M    | F   | P  | S    | T    | W    | Y    | V    |
|---|------------|-------------|-------|------------|-------------|-----|------|------|------|------|------|------|-----|----|------|------|------|------|------|
| A | -2         | -2          | -3    | -4         | -2          | -2  | -3   | -4   | -3   | 3    | 2    | -2   | 6   | 0  | -3   | -2   | -1   | -2   | -2   |
| R | -1         | 4           | -1    | -2         | -4          | 0   | -1   | -3   | -1   | -3   | 3    | -2   | -4  | 5  | -1   | -1   | -4   | -1   | 4    |
| N | -1         | 1           | 4     | 0          | -4          | 1   | 0    | -2   | -1   | -3   | -3   | 5    | -2  | -4 | -2   | 0    | -1   | -4   | -1   |
| D | -1         | -3          | -4    | -4         | -2          | -3  | -3   | -4   | -4   | 4    | 2    | -3   | 1   | -1 | -3   | -3   | -1   | -3   | -1   |
| C | -1         | 0           | 3     | 0          | -3          | 5   | 1    | -2   | 0    | -3   | -3   | 0    | -1  | -4 | -2   | 0    | 2    | -3   | -1   |
| Q | -1         | -1          | -3    | -3         | -2          | -2  | -4   | -3   | 1    | 2    | 2    | 0    | -2  | -3 | -2   | -1   | -3   | -1   | -1   |
| E | -2         | -3          | -4    | -4         | -3          | 1   | -3   | -5   | -3   | 2    | 4    | -3   | 4   | -1 | -4   | -3   | -2   | -3   | -2   |
| G | 0          | -4          | -4    | -4         | -2          | -3  | -3   | -4   | -4   | 3    | 1    | -3   | 0   | -2 | -3   | -2   | 1    | -4   | 0    |
| H | 0          | -3          | -3    | -4         | -3          | -3  | -4   | -2   | -1   | 3    | -3   | 0    | 3   | -4 | -2   | 2    | -1   | 0    | -3   |
| I | 1          | -3          | -4    | -4         | -2          | -3  | -3   | -4   | -4   | 1    | 4    | -3   | 5   | -1 | -4   | 0    | -2   | -3   | 1    |
| L | -4         | -9          | -13   | -15        | -9          | -10 | -11  | -16  | -12  | 7    | 9    | -6   | 7   | 0  | -13  | -9   | -1   | -9   | -4   |
| K | -0.4       | -0.9        | -1.3  | -1.5       | -0.9        | -1  | -1.1 | -1.6 | -1.2 | -0.7 | -0.9 | -0.6 | 0.7 | 0  | -1.3 | -0.9 | -0.1 | -0.9 | -0.4 |
| M | 0.40131234 | 0.289050497 | ..... | 0.40131234 | 0.289050497 |     |      |      |      |      |      |      |     |    |      |      |      |      |      |

Divided by Length

$$\text{Scale by } \frac{1}{1+e^{-x}}$$

|   |            |             |       |            |             |
|---|------------|-------------|-------|------------|-------------|
| A | 0.40131234 | 0.289050497 | ..... | 0.40131234 | 0.289050497 |
|---|------------|-------------|-------|------------|-------------|

## Convolutional Neural Networks

Input layer



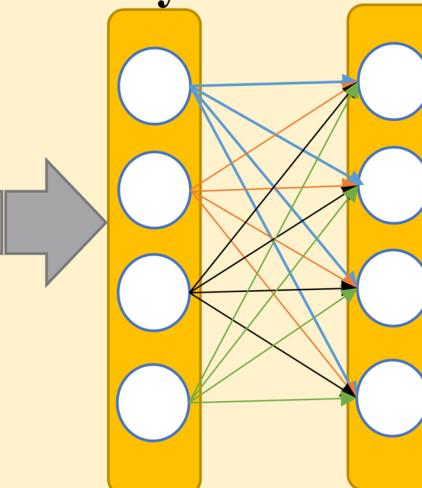
Convolutional layer



Pooling layer



Fully connected layer



Output layer

SNARE

Non-SNARE

## Evaluation

Final Model