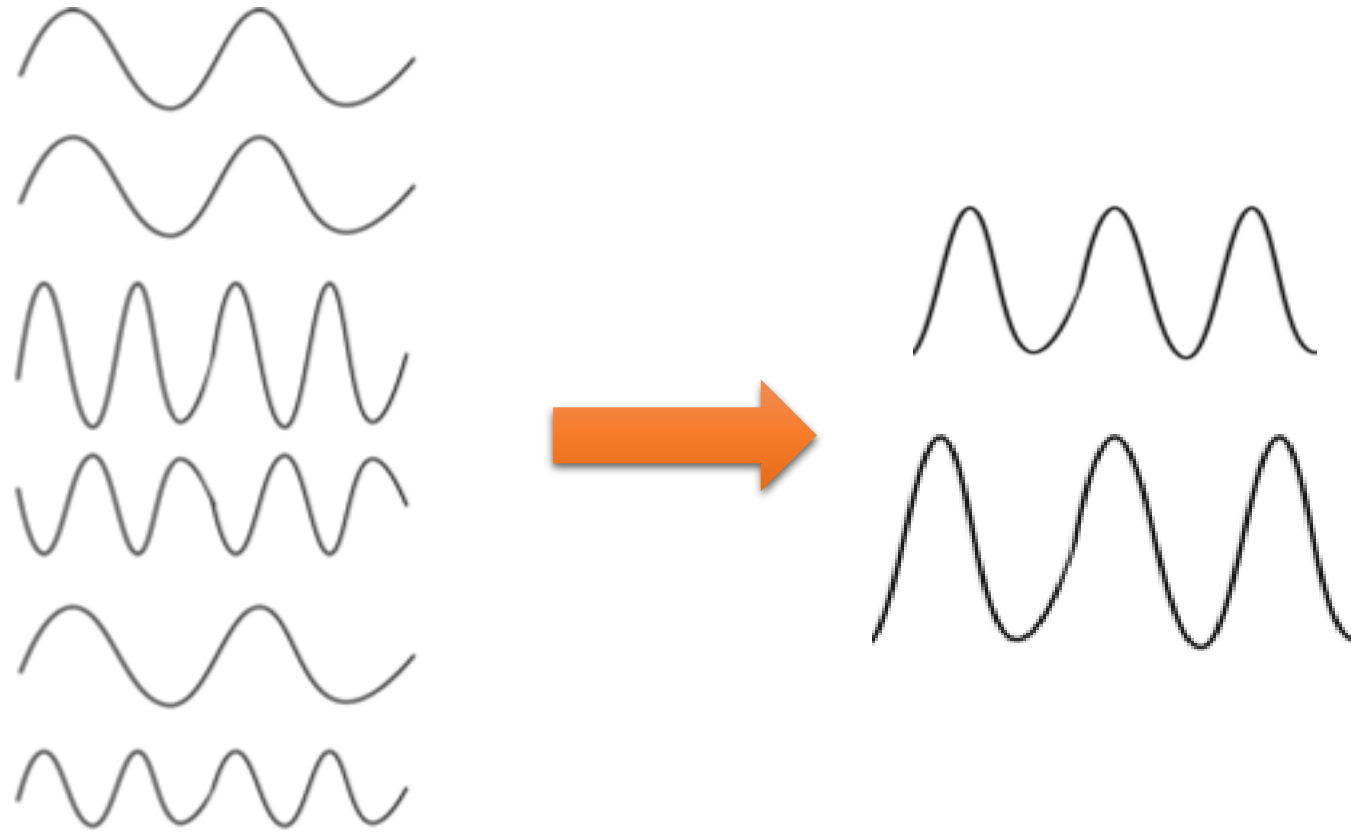


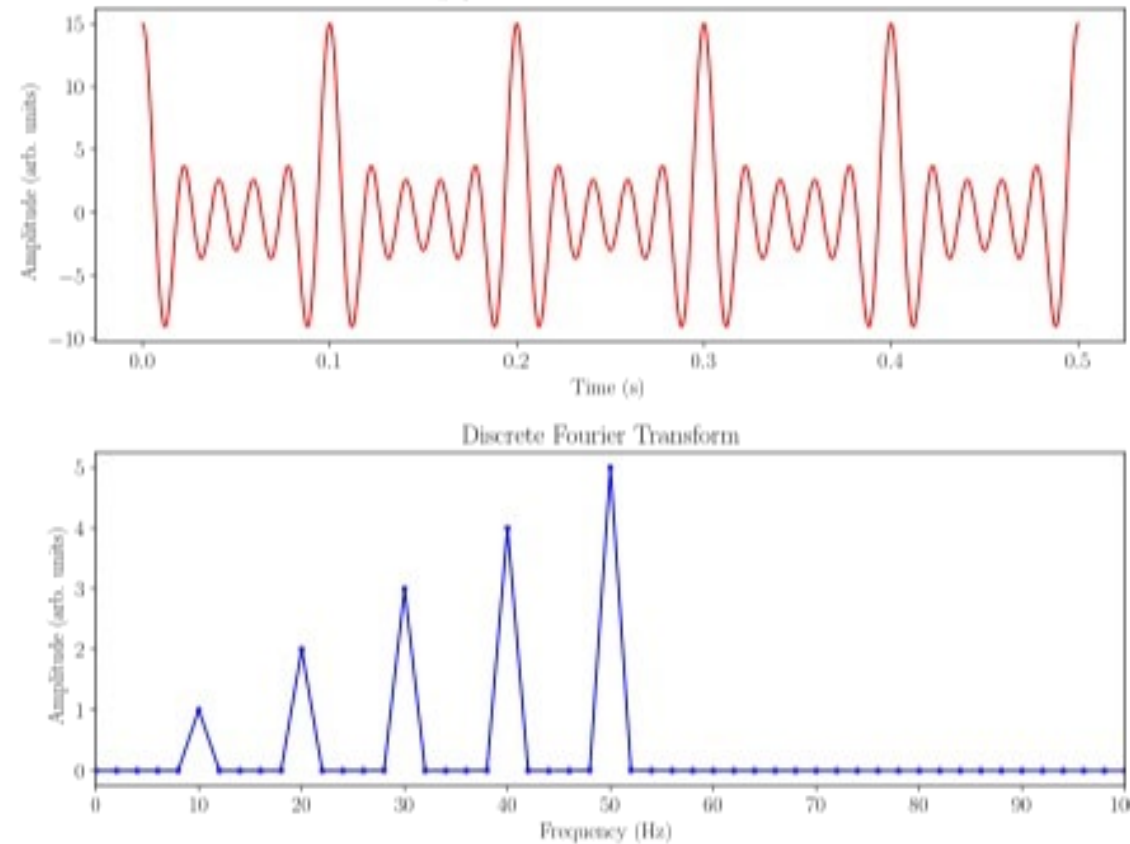
# Step 1: Detecting the most common ranges of frequency and amplitude in various readings



Various readings at various times

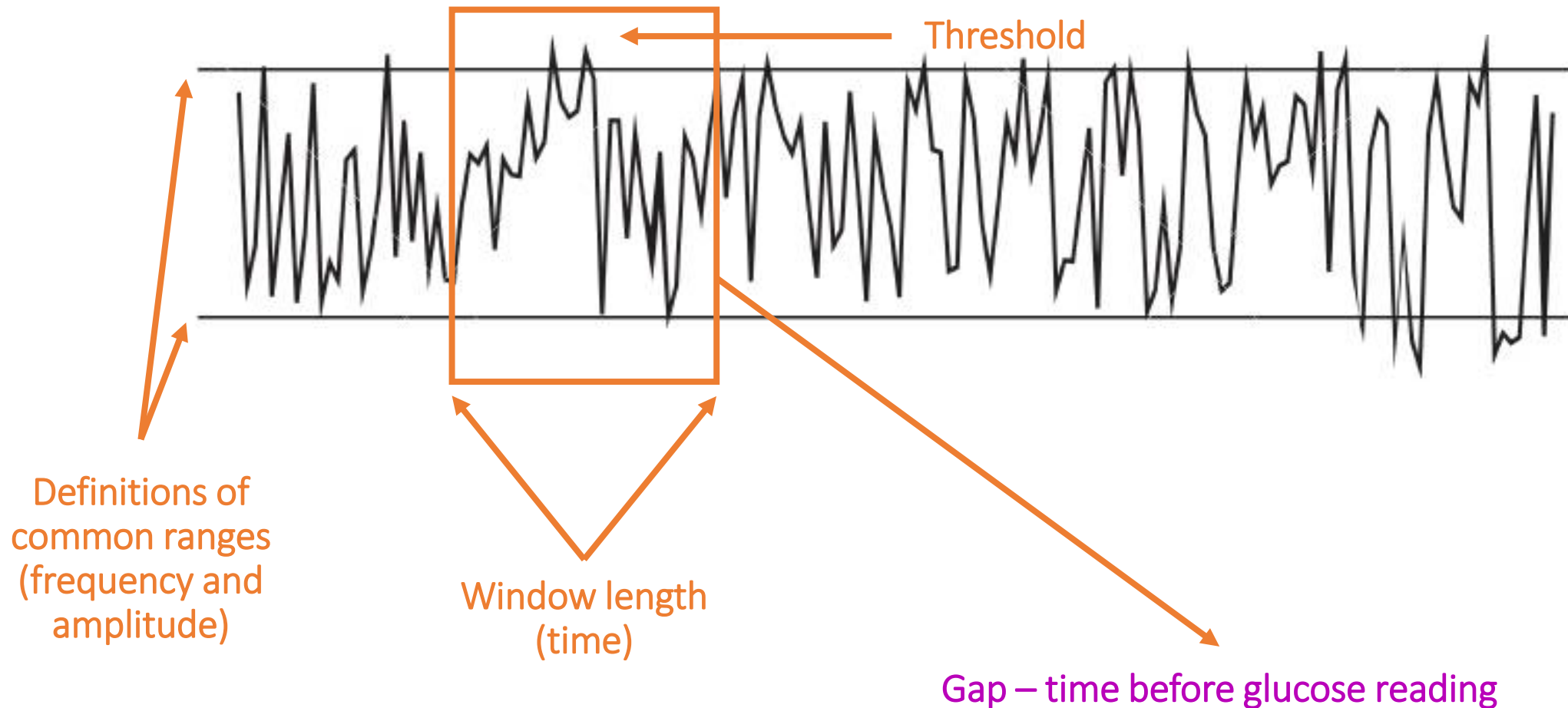
Range of most common readings

## Step 2: Evolutionary computation (Genetic Algorithms) evolving the formulas for mathematical transformations



Fourier Transform as an example

## Step 3: Evolutionary computation (Genetic Algorithms) evolving the parameters of “predictive sliding windows”



# Step 4.1: Classifier analysis (F1) between events of deviation from threshold and hyperglycemia times

## Params of predictive sliding window:

Window = 58.82 minutes

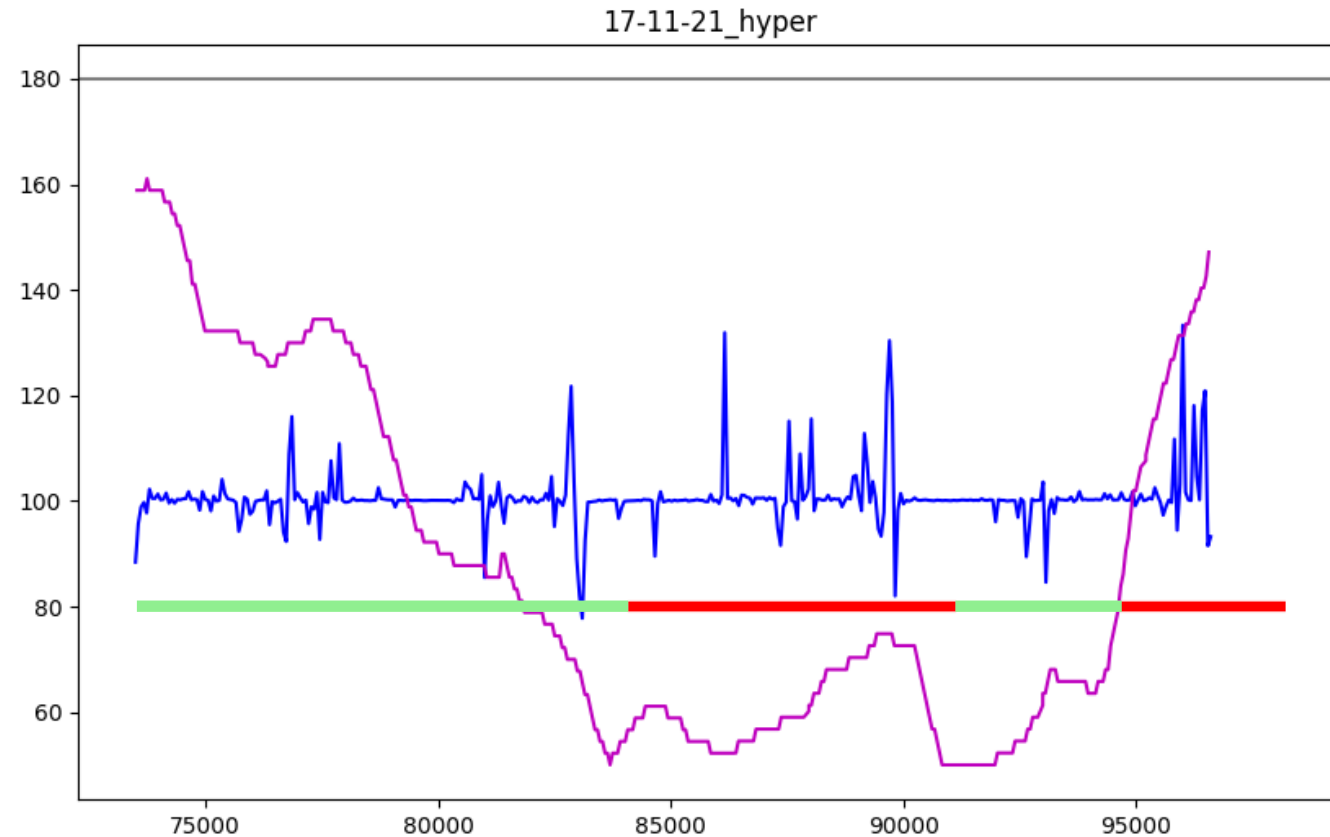
Gap = 17.97 minutes

Threshold = -0.01496

**Accuracy = 0.778**

**Specificity = 0.767**

**F1 = 0.727**


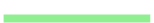




## Legends:

### Readings

-  Sensor
-  Glucose

### Classification Results (clustered)

-  True Positive
-  True Negative
-  False Positive
-  False Negative

# Step 4.1: Classifier analysis (F1) between events of deviation from threshold and hyperglycemia times

## Params of predictive sliding window:

Window = 58.82 minutes

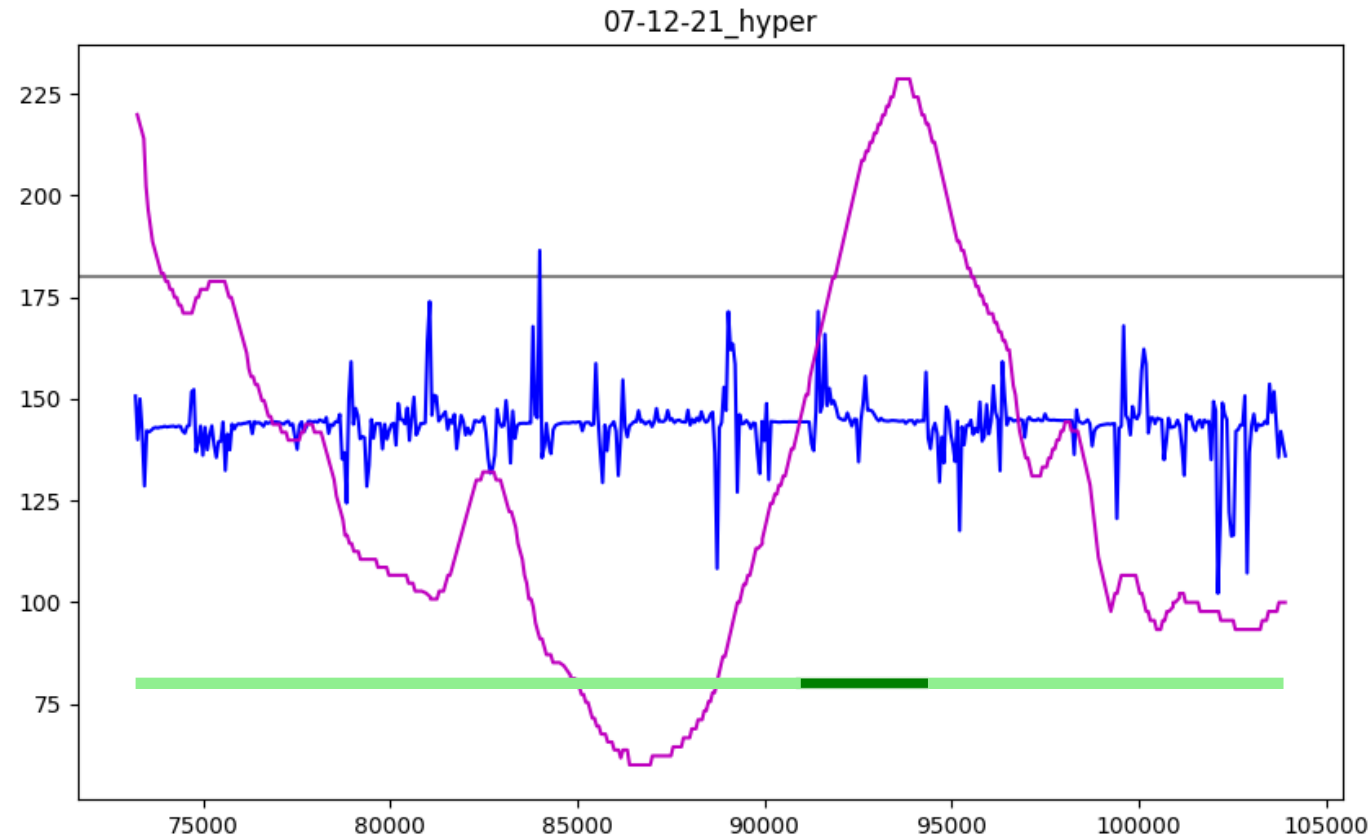
Gap = 17.97 minutes

Threshold = -0.01496

**Accuracy = 0.778**

**Specificity = 0.767**

**F1 = 0.727**







## Legends:

### Readings

-  Sensor
-  Glucose

### Classification Results

(clustered)

-  True Positive
-  True Negative
-  False Positive
-  False Negative

# Step 4.1: Classifier analysis (F1) between events of deviation from threshold and hyperglycemia times

## Params of predictive sliding window:

Window = 58.82 minutes

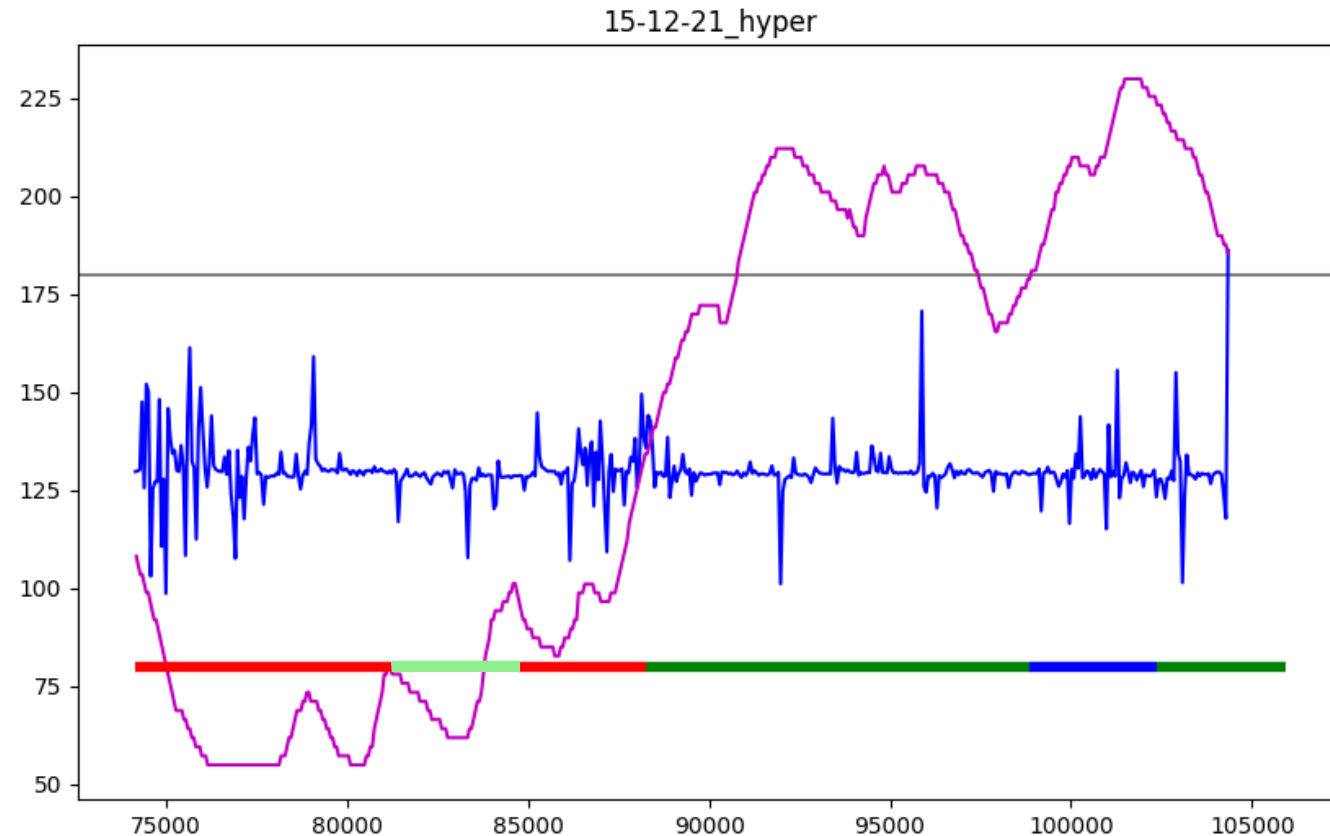
Gap = 17.97 minutes

Threshold = -0.01496

**Accuracy = 0.778**

**Specificity = 0.767**

**F1 = 0.727**







## Legends:

### Readings

-  Sensor
-  Glucose

### Classification Results

(clustered)

-  True Positive
-  True Negative
-  False Positive
-  False Negative

# Step 4.1: Classifier analysis (F1) between events of deviation from threshold and hyperglycemia times

**Params of predictive sliding window:**

Window = 58.82 minutes

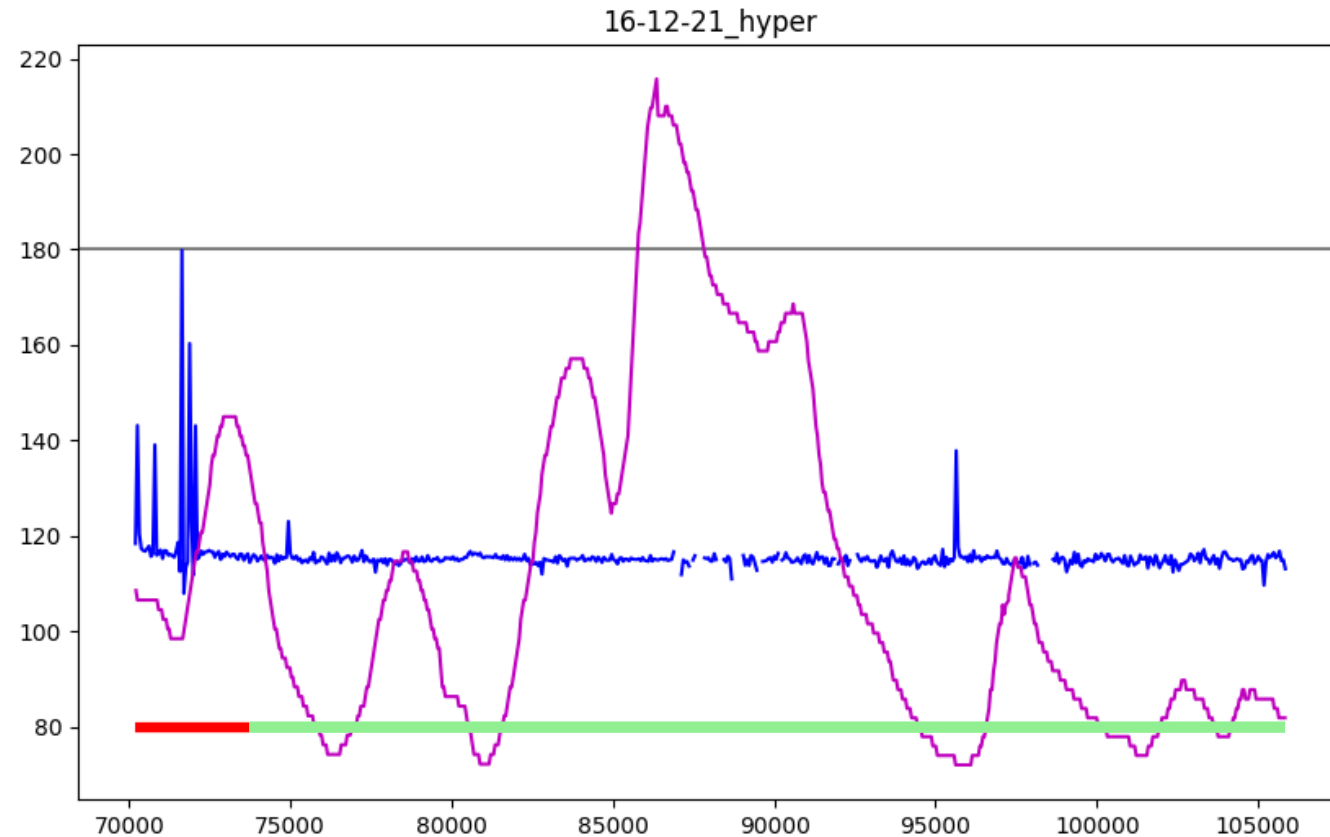
Gap = 17.97 minutes

Threshold = -0.01496

**Accuracy = 0.778**

**Specificity = 0.767**

**F1 = 0.727**







**Legends:**

Readings

 Sensor  
 Glucose

Classification Results  
(clustered)

 True Positive  
 True Negative  
 False Positive  
 False Negative

## Step 4.2: Classifier analysis (F1) between events of deviation from threshold and hypoglycemia times

### Params of predictive sliding window:

Window = 56.92 minutes

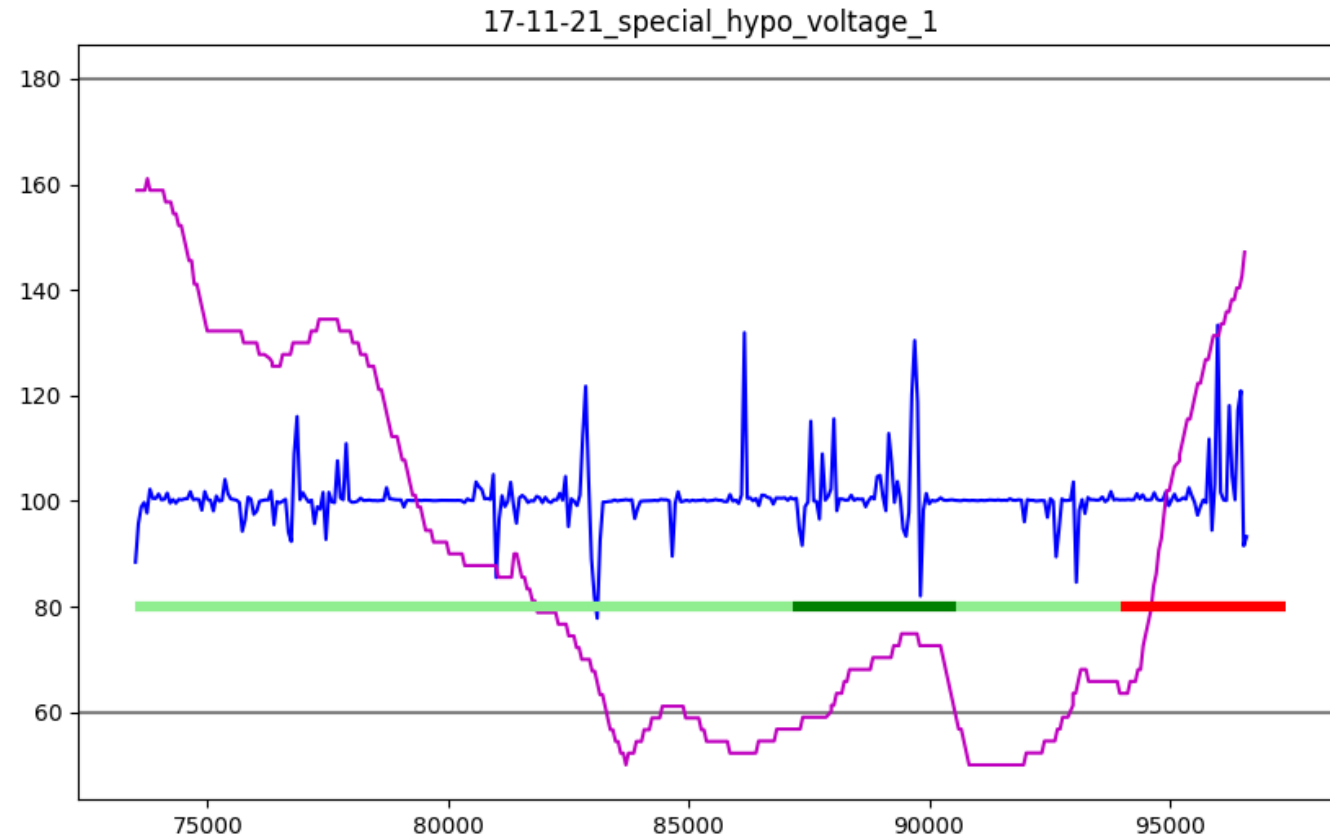
Gap = 14.8 minutes

Threshold = 0.13439

**Accuracy = 0.97**

**Specificity = 0.97**

**F1 = 0.8**


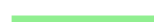




### Legends:

#### Readings

 Sensor  
 Glucose

#### Classification Results (clustered)

 True Positive  
 True Negative  
 False Positive  
 False Negative



## Step 4.2: Classifier analysis (F1) between events of deviation from threshold and hypoglycemia times

### Params of predictive sliding window:

Window = 56.92 minutes

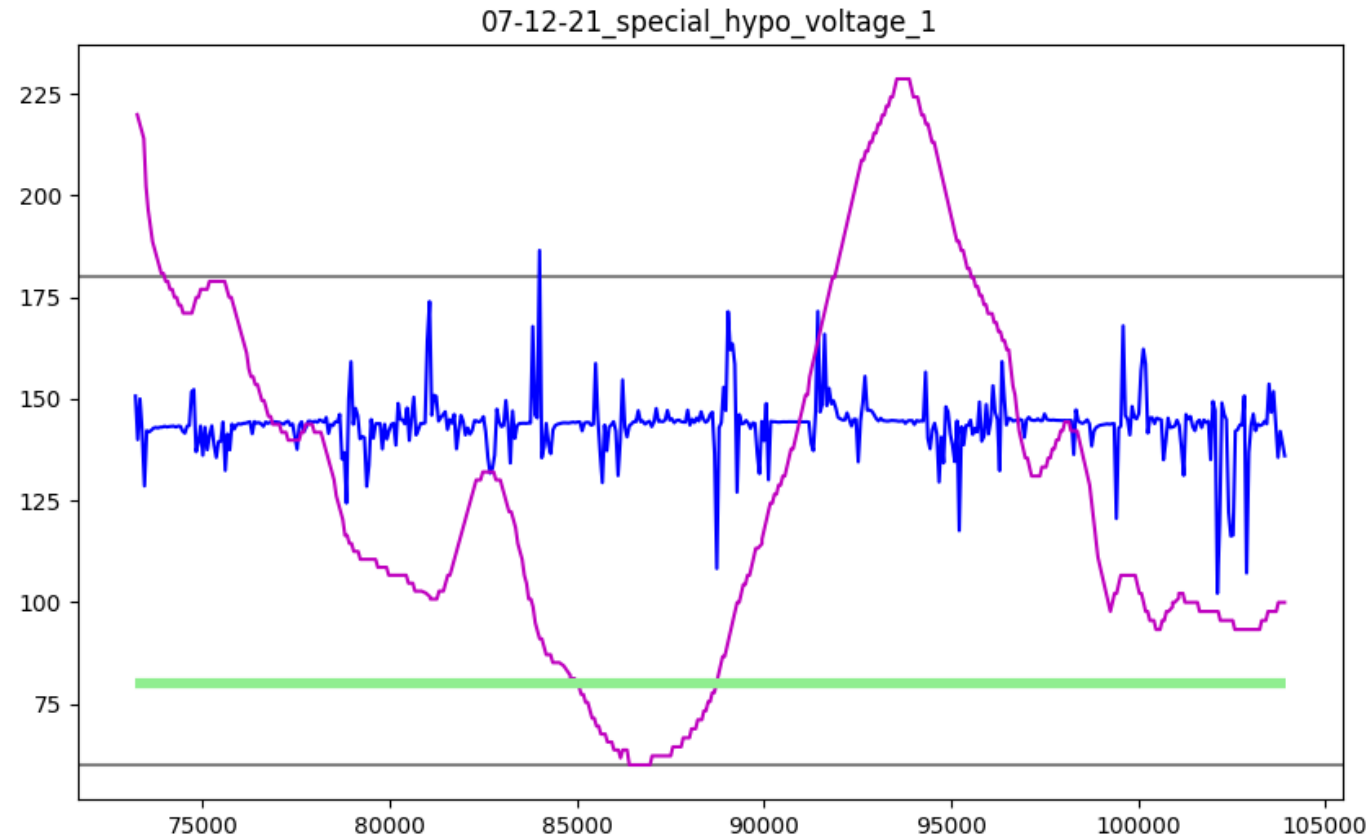
Gap = 14.8 minutes

Threshold = 0.13439

**Accuracy = 0.97**

**Specificity = 0.97**

**F1 = 0.8**



### Legends:

#### Readings

- Sensor
- Glucose

#### Classification Results (clustered)

- True Positive
- True Negative
- False Positive
- False Negative

## Step 4.2: Classifier analysis (F1) between events of deviation from threshold and hypoglycemia times

### Params of predictive sliding window:

Window = 56.92 minutes

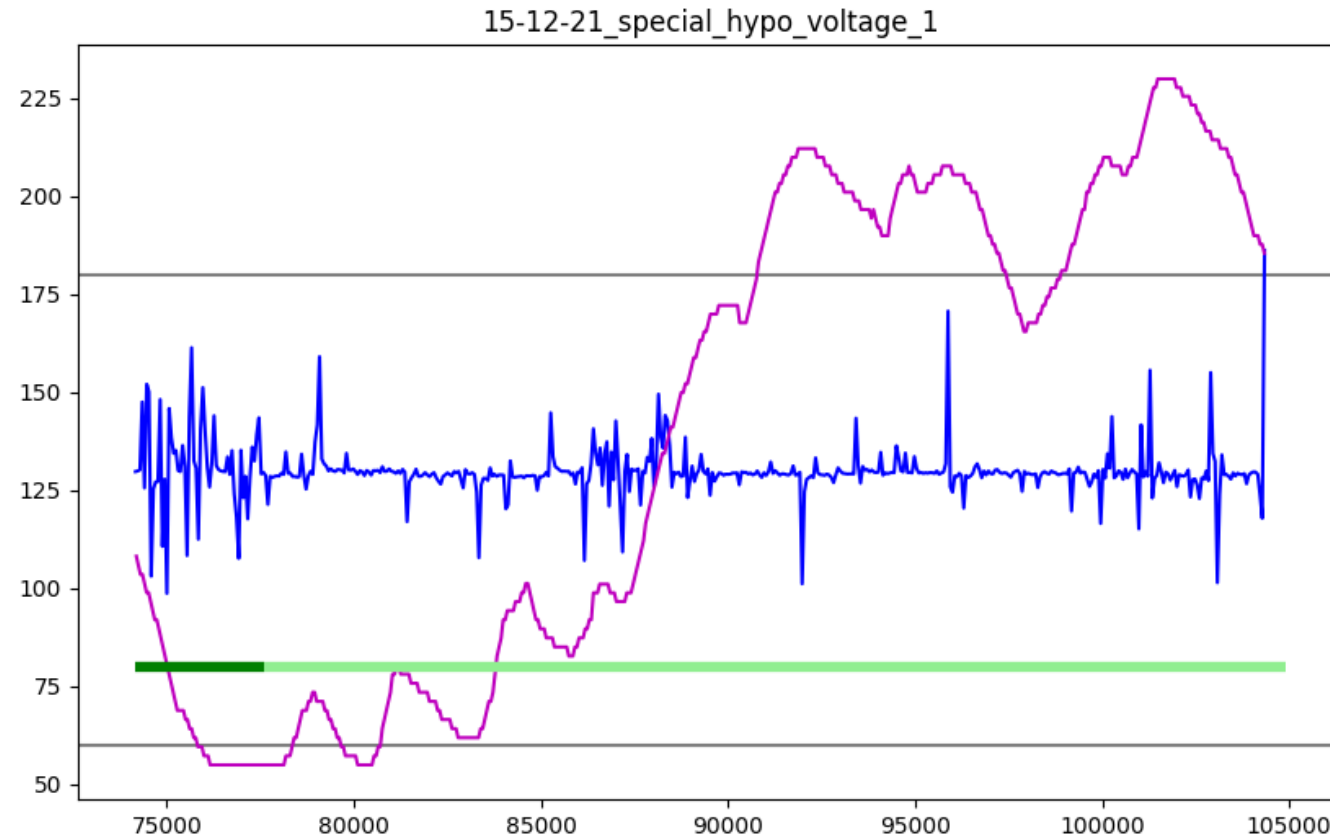
Gap = 14.8 minutes

Threshold = 0.13439

**Accuracy = 0.97**

**Specificity = 0.97**

**F1 = 0.8**



### Legends:

#### Readings

- Sensor
- Glucose

#### Classification Results (clustered)

- True Positive
- True Negative
- False Positive
- False Negative

## Step 4.2: Classifier analysis (F1) between events of deviation from threshold and hypoglycemia times

**Params of predictive sliding window:**

Window = 56.92 minutes

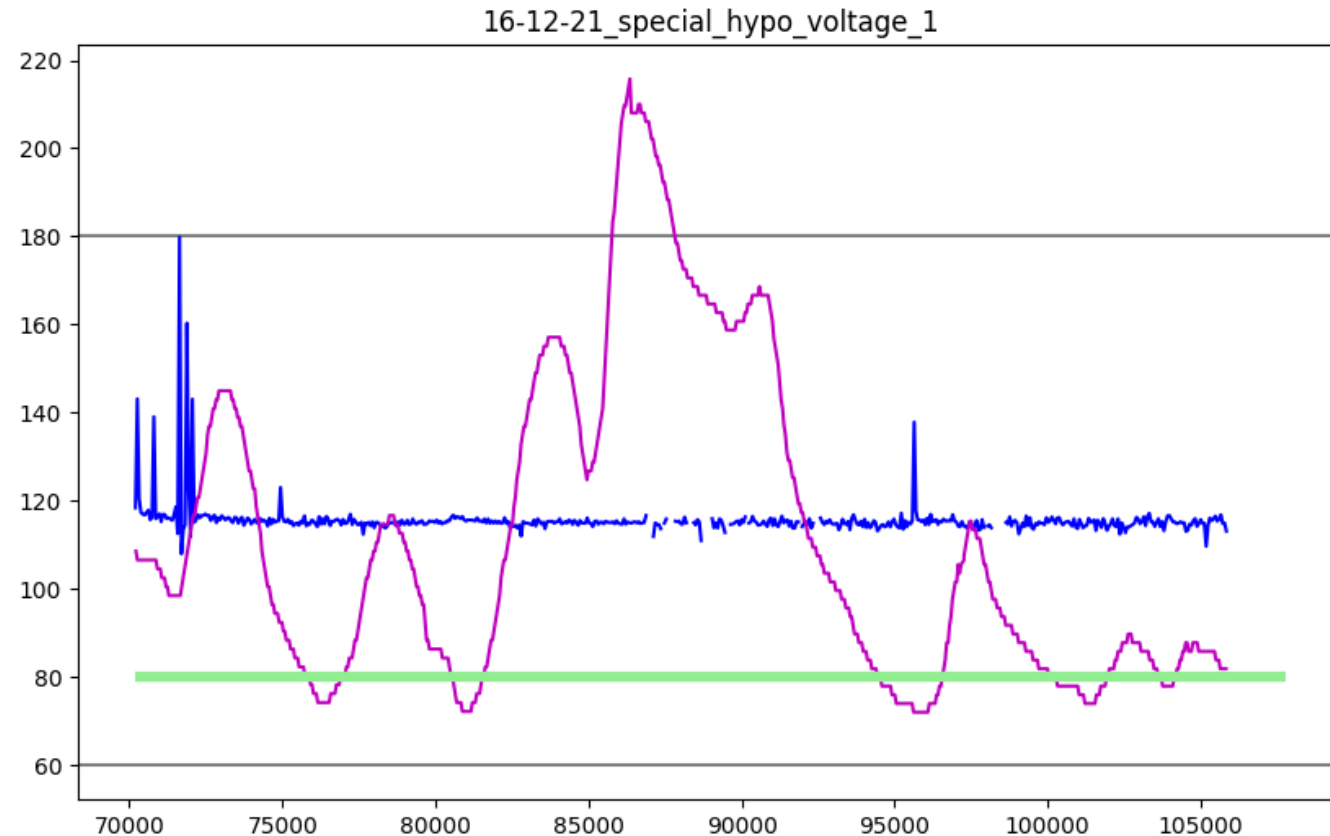
Gap = 14.8 minutes

Threshold = 0.13439

**Accuracy = 0.97**

**Specificity = 0.97**

**F1 = 0.8**







**Legends:**

Readings

 Sensor  
 Glucose

Classification Results  
(clustered)

 True Positive  
 True Negative  
 False Positive  
 False Negative

# Summary: Most Significant Signals

Parameter	Hyperglycemia	Hypoglycemia
Window (seconds)	3,529	3,415
Gap (seconds)	1,078	886
Threshold	-0.01496	0.13439
# of True Positives	17,645	6,830
# of True Negatives	81,167	112,695
# of False Positives	24,703	3,415
# of False Negatives	3,529	0
Accuracy	0.778	0.972
Specificity	0.767	0.971
F1	0.727	0.8

## Summary: Signal Ranges

Parameter	Hyperglycemia	Hypoglycemia
Minimal Window (seconds)	2,364	2,998
Maximal Window (seconds)	3,529	3,478
Minimal Gap (seconds)	1,078	676
Maximal Gap (seconds)	3,561	1,733
Minimal Threshold	-0.092567	-0.101597
Maximal Threshold	-0.006165	0.134386
Minimal F1	0.516	0.514
Maximal F1	0.727	0.8