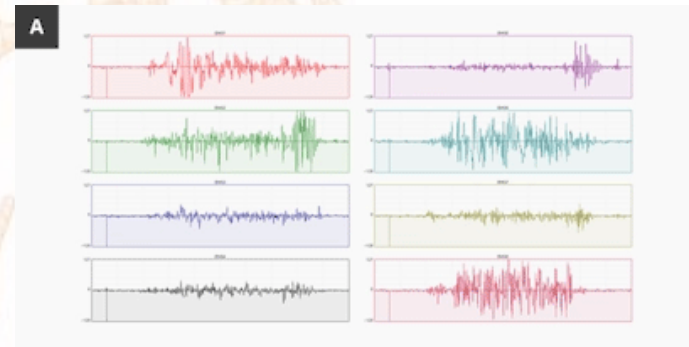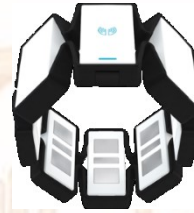# Proposal Talk

02.10.2017

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Institute of Medical Informatics, Uniklinik RWTH Aachen

Finger gesture recognition with Myo

- For different finger gestures -> find best detection accuracy.

- Signals acquired with Myo.

- Focus solely on EMG signals.

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Why gesture recognition?

- Image analysis requires ...

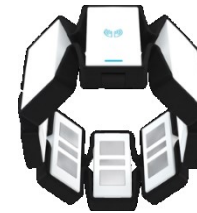- Voice recognition requires ...

- Sensing gloves are expensive.

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Why Electromyography?

- Safe
- Easy
- Non-invasive

Why Myo?

- Wireless
- Cheap
- No gel to facilitate conductivity

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State of the art

- A myo-controlled robotic arm was developed.

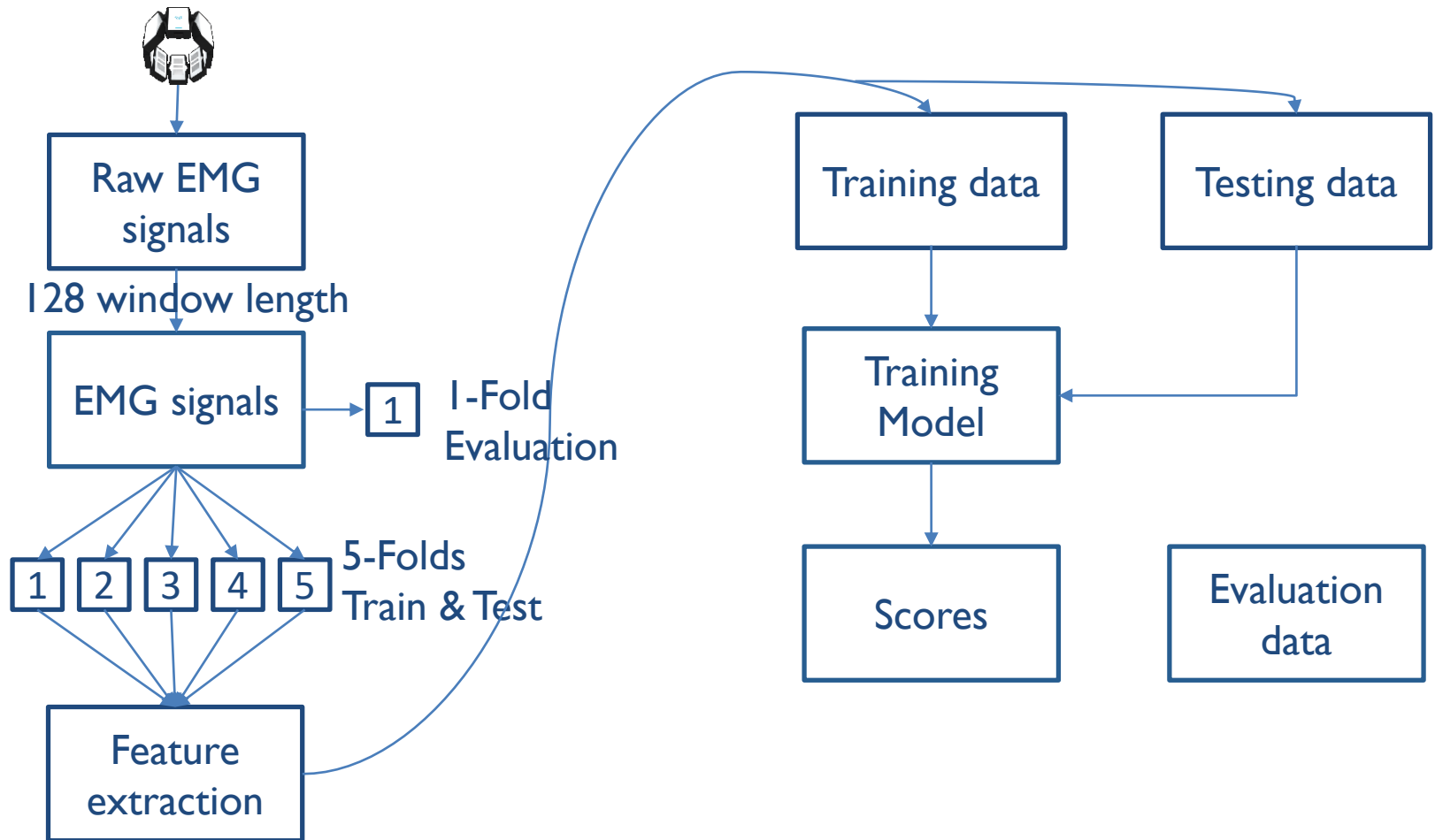- Myo helps surgeon to control interface during surgery.

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State of the art cont'd

- Armin van Buuren controlled the stage effects during his performance.
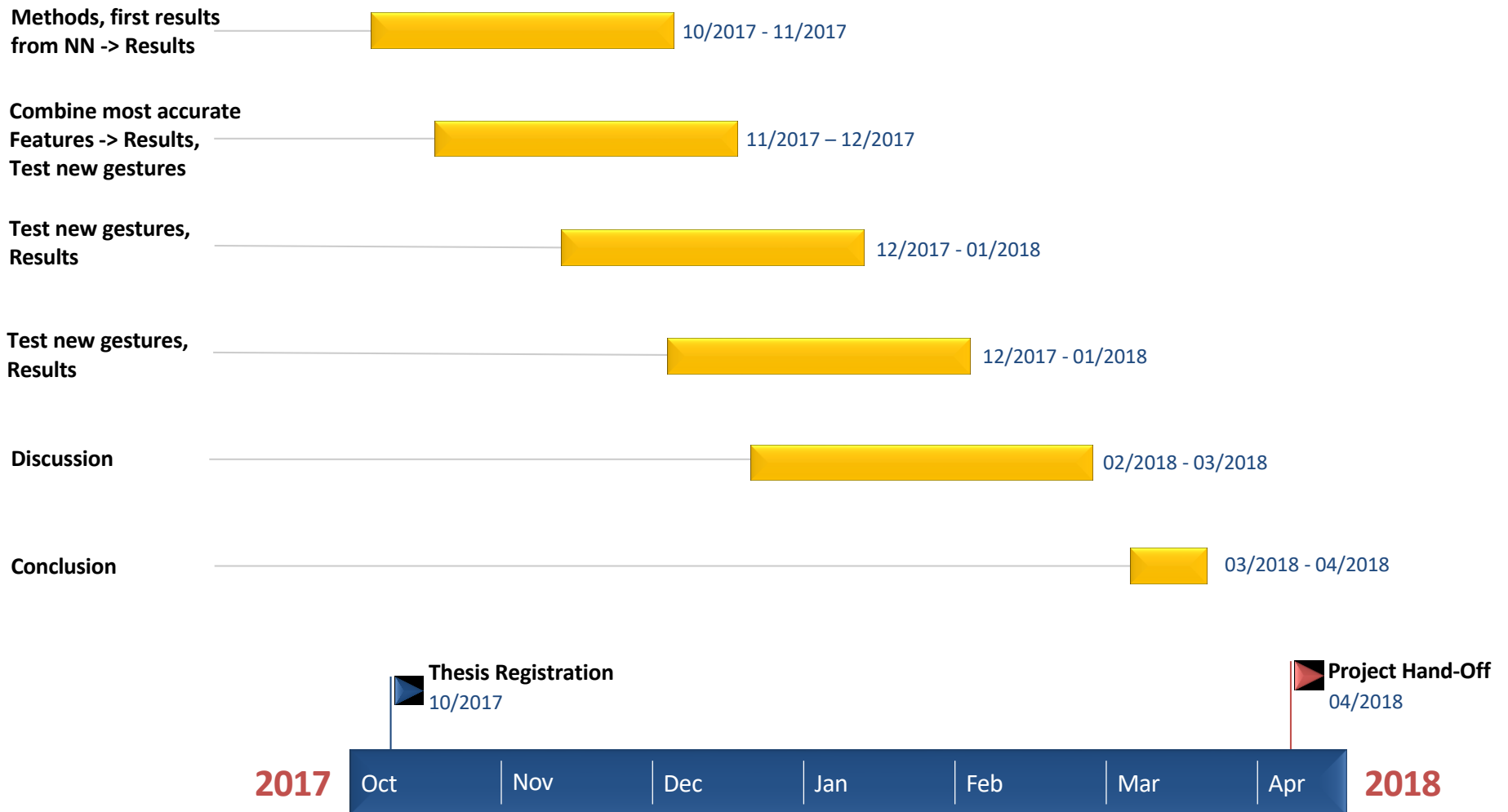
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Methods

- 128 window length of the raw EMG data

- Extracted features:
  - Root-mean-square
  - Short-time fourier transform
  - Moving average
  - Various discrete wavelet transforms with different levels (haar, db8, sym4/8, bior1.3/2.2, coif3/4)

- Classifiers:
  - kNN
  - SVM
  - ANN

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Tasks

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Timeline

Methods, first results from NN -> Results
10/2017 - 11/2017

Combine most accurate Features -> Results, Test new gestures
11/2017 – 12/2017

Test new gestures, Results
12/2017 - 01/2018

Test new gestures, Results
12/2017 - 01/2018

Discussion
02/2018 - 03/2018

Conclusion
03/2018 - 04/2018

Thesis Registration
10/2017

Project Hand-Off
04/2018

2017 Oct | Nov | Dec | Jan | Feb | Mar | Apr **2018**

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Summary

- What I have done
  - Data collection
  - Artifacts removal
  - Created separate folds for train, test and evaluation data.
  - Data preprocess
  - Run SVM, ANN classifier

- What I will do
  - Find the optimal parameters for SVM, ANN for the best detection accuracies.
  - Combine the best feature sets to increase the detection accuracies.

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