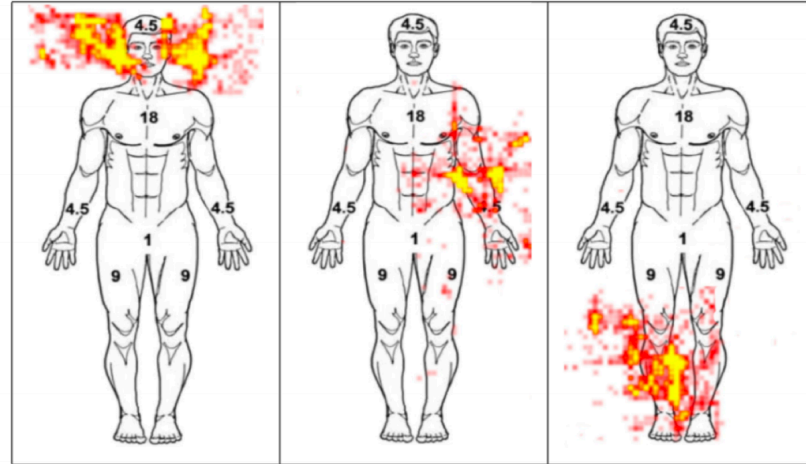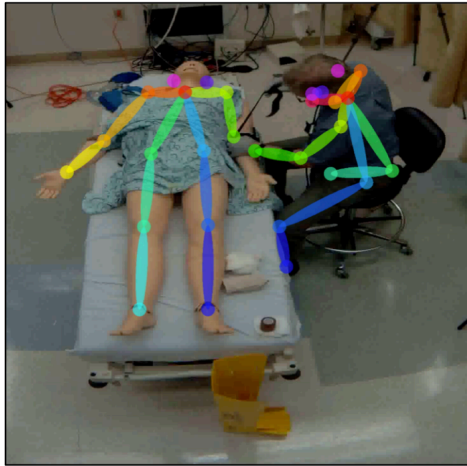# Project Presentation

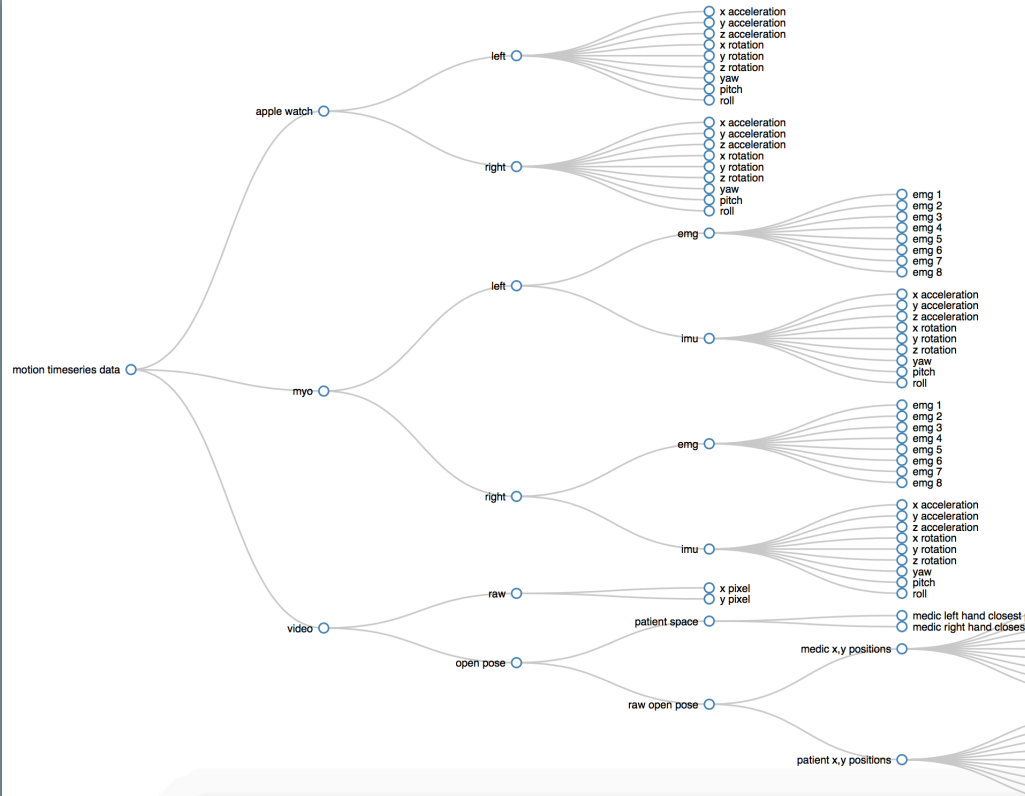VANDERBILT UNIVERSITY

Deirdre Scully

Data

Intubation can only occur if the medic's hands are over / near the patient's head

Heatmaps for intubation, IV and splinting, respectively.

Goal: compare input features classification performance across procedures

Data

motion timeseries data

- apple watch
  - left
    - x acceleration
    - y acceleration
    - z acceleration
    - x rotation
    - y rotation
    - z rotation
    - yaw
    - pitch
    - roll
  - right
    - x acceleration
    - y acceleration
    - z acceleration
    - x rotation
    - y rotation
    - z rotation
    - yaw
    - pitch
    - roll
- myo
  - left
    - emg
      - emg 1
      - emg 2
      - emg 3
      - emg 4
      - emg 5
      - emg 6
      - emg 7
      - emg 8
    - imu
      - x acceleration
      - y acceleration
      - z acceleration
      - x rotation
      - y rotation
      - z rotation
      - yaw
      - pitch
      - roll
  - right
    - emg
      - emg 1
      - emg 2
      - emg 3
      - emg 4
      - emg 5
      - emg 6
      - emg 7
      - emg 8
    - imu
      - x acceleration
      - y acceleration
      - z acceleration
      - x rotation
      - y rotation
      - z rotation
      - yaw
      - pitch
      - roll
- video
  - raw
    - x pixel
    - y pixel
  - open pose
    - patient space
      - medic left hand closest p
      - medic right hand closest
    - medic x,y positions
  - raw open pose
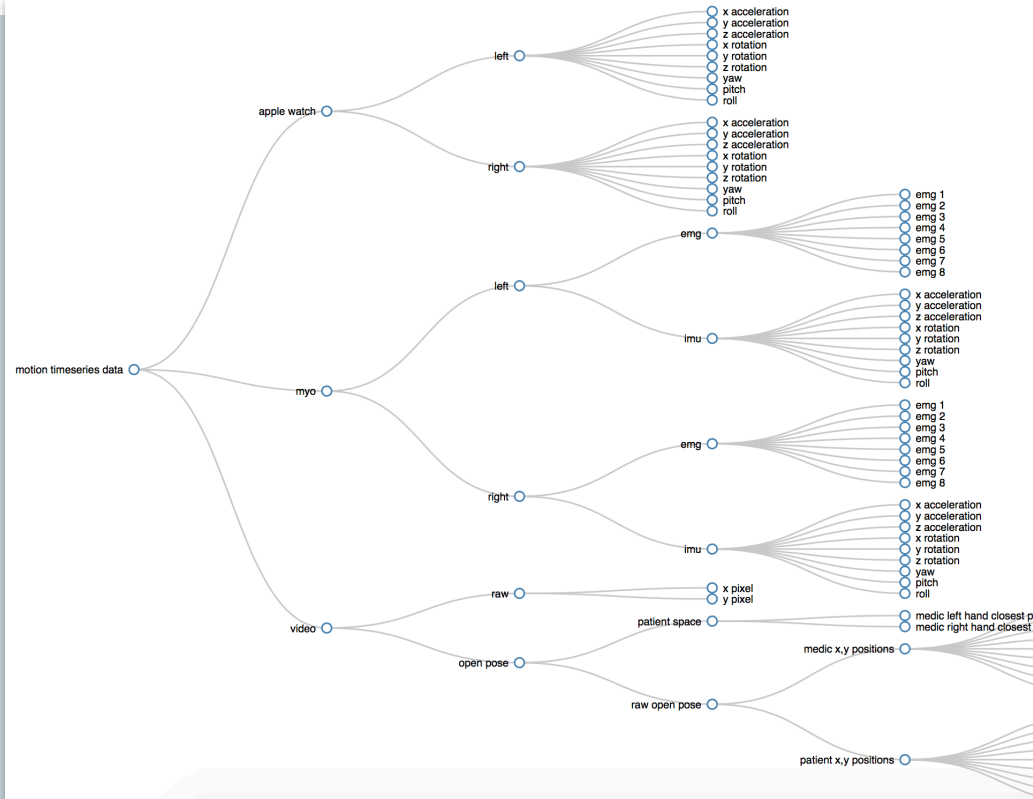   - patient x,y positions

Task: classify procedures

Models

- Random Forest Classifier
- Cross Validation
- Individual time points are treated separately
- Time points of an instance vote for final classification
- Vote counts are used for % measures in evaluation of models

TimeStamps	Feature 1	…	Feature 300
1			
2			
…			
500000			

Visualizations

- Encoding data types and organization
- Hierarchy encoded by x-axis and edge
- Visualizes data options
- User can expand certain nodes
- Add accuracy scores and higher levels

Visualizations

- Encoding correct and incorrect classifications by procedure
- Voting %s encoded by y-axis
- Classes predicted encoded by x-axis spaces and color hue
- Correct/incorrect classifications encoded as solid/striped boxes
- Actual classes encoded by same color hue
- Visualizes correct classifications and which classes are misclassified
- User can change the input set of features
- Context of all data same plot for comparison