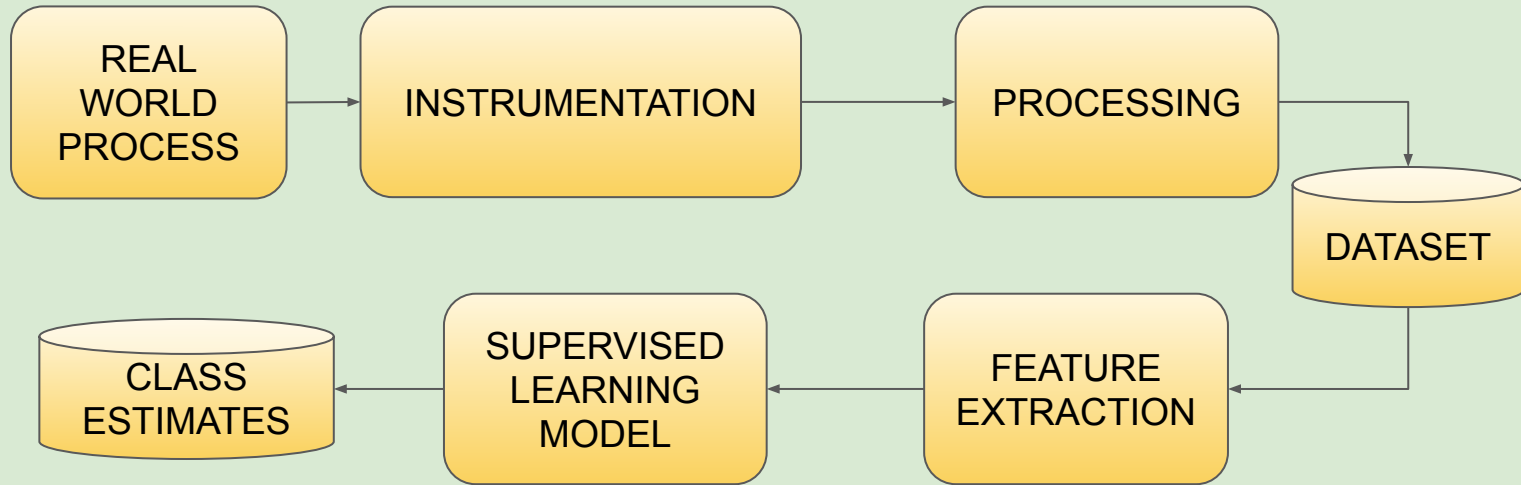
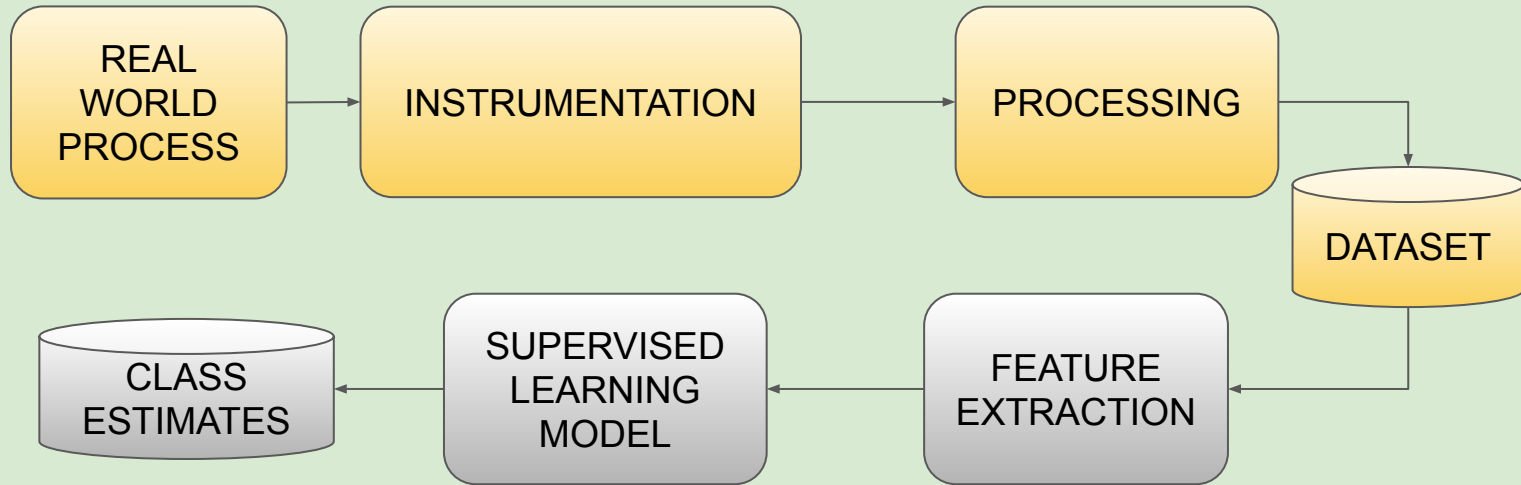


SUPERVISED LEARNING

BLOCK DIAGRAM



BLOCK DIAGRAM



REAL WORLD PROCESSES & APPLICATIONS

- Computer Vision
- Geophysical Processes
- Biophysical Processes
- Medical image/data/signal Analysis
- Sports Analytics

Computer Vision

- Process: Visual information (light), Instrumentation: Lens based camera
- Input: Digital Imagery, Videos
- Targets
 - Classification of images
 - Object segmentation and identification
- More Targets
 - Pixel level classification
 - Human face recognition
 - Person tracking in videos
 - Pose estimation
 - Human detection

Geophysical Data Analysis

Weather & Climate Data

- Process: Rainfall , Instrumentation: Radar, Satellite, Cameras
- Target: Prediction & Estimation of rainfall
- Process: Soil moisture, Instrumentation: Microwave sensors, Capacitance based sensors
- Target: Quality Assessment of soil moisture estimates w.r.t ground measurements
- Process: Sea Surface winds- Instrumentation - Buoys on sea surface
- Target: Prediction of wind speeds - cyclones

Biosignal Analysis

Biophysical/electrical processes

Process: Electrical activity in the Brain, Instrumentation: EEG sensors

Targets: Intention, action executed, neuropathology - epilepsy

Process: Electrical activity in the heart, Instrumentation: ECG sensors

Targets: Heart health condition -eg. Risk of an infraction

Process: Myoelectrical activity, Instrumentation - EMG sensors

Targets: Movement classification, muscle disease - eg. muscle weakness

Medical image/data/signal analysis

Process: Bone pathology , malign tumors

Instrumentation: X-ray (scanning)

Targets: Disease diagnosis eg. Osteoporosis, cancers

Process: Mental activity, brain tumors Instrumentation: MRI/fMRI

Targets: Mental activity decoding, Brain tumor localization/identification

Sports Analytics & Science (Cricket)

Process: History of cricket matches (between two sides)

Instrumentation: Videos, match records

Inputs: Historical and current match data (scores)

Targets: Outcome prediction for an ongoing match

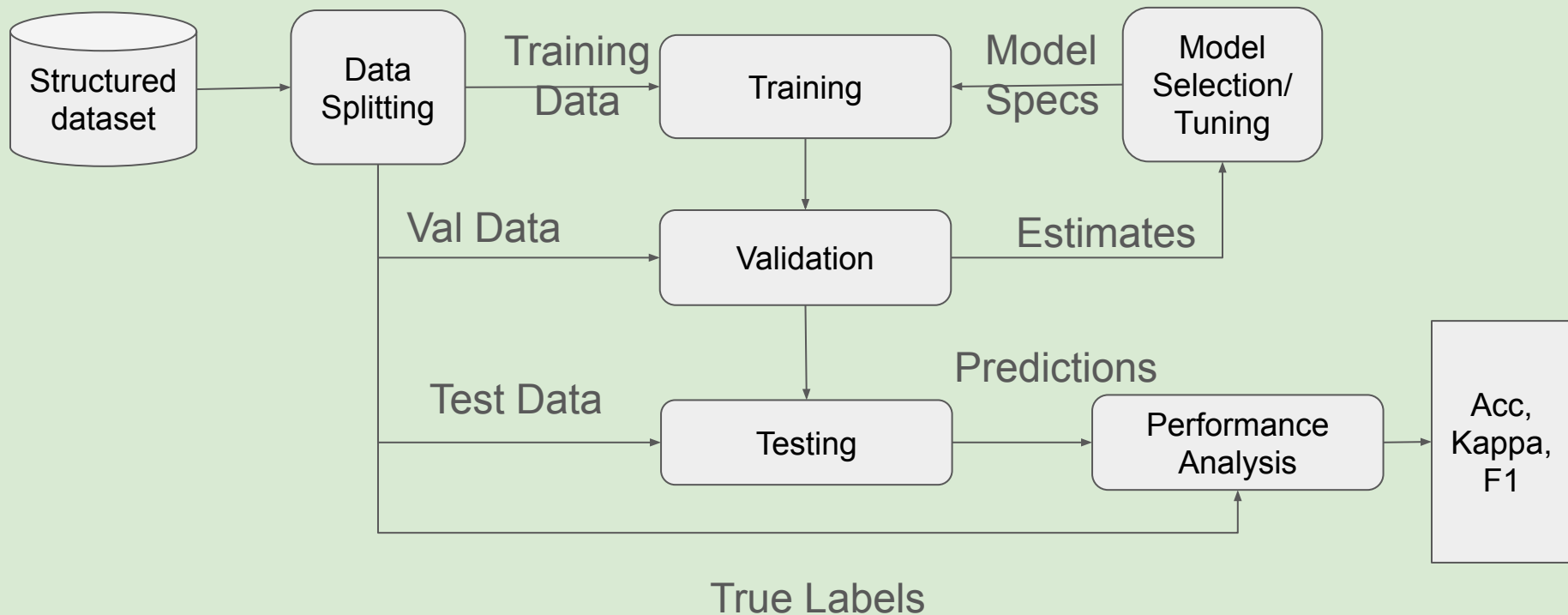
Process: Bowling

Instrumentation: Videos, anthropometrics

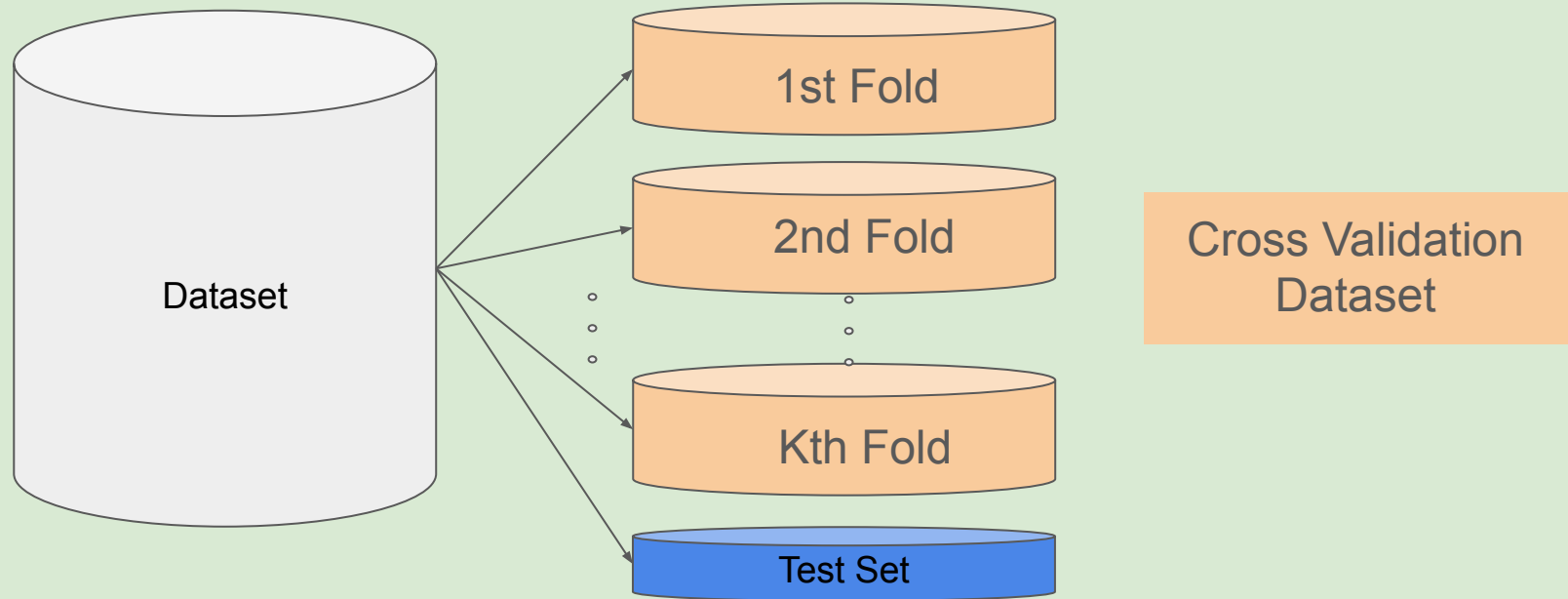
Inputs: Bowlers anthropometrics

Targets: ball speed, swing, spin, direction etc.

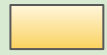
Learning Strategy



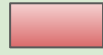
K Fold Cross validation



3 Fold - CV Strategy



Training Data



Validation Data

