Identifying Aggressive or Unsafe Vehicle Behaviors

• Acceleration Behaviors
  – Accelerating too quickly
  – Braking too sharply
  – Not braking when should be braking

• Speeding

• Following too closely

• Lane Changes
  – Twice in rapid succession
  – Three lane changes in a short period of time
Weaknesses

• Accuracy of the results is based heavily on the accuracy of the input data
  – “Jittery” position data can cause extreme instantaneous velocity/acceleration calculations
  – Input position data is averaged to compensate for this
    \[ x(i) = \text{mean}( x(i - n) : x(i + n) ) \]
Weaknesses (contd)

• Intelligent driver model is difficult to calibrate, there are many variables
  – Max acceleration, comfortable deceleration, safe time behind leading vehicle, desired velocity
• Difficult to judge the correctness of the system and determine threshold values
  – How many lane changes is too many?
  – How much acceleration is aggressive?
  – Is 5 mph over the speed limit OK?
• Cannot easily look at the video to determine some aggressive behaviors
  – acceleration