State Chart Diagram:-

Image Processing State Chart Diagram-

```
 ●──→ ┌─────────────────┐  Video  ┌─────────────────┐  Frames  ┌─────────────────┐
      │  Input Video    │ ───────→ │ Frame extraction│ ───────→ │  Conversion to  │
      │─────────────────│         │─────────────────│         │  gray scale and │
      │ Fetch external  │         │ Extract frames  │         │    blurring     │
      │  front view     │         │  from videos    │         │─────────────────│
      └─────────────────┘         └─────────────────┘         │ Converting each │
                                                              │    frame to     │
                                                              │  grayscale and  │
                                                              │  applying blur  │
                                                              └─────────────────┘
                                                                       │
                                                                 Gray scaled
                                                                 and blurred
                                                                    frame
                                                                       ↓
            ◉  ←────────────────  ┌─────────────────┐
                 Processed Video  │ Collecting frames│
                                  │─────────────────│
                                  │  Collecting and │
                                  │  merging frames │
                                  │ after all       │
                                  │ processing      │
                                  │ in original     │
                                  │    order        │
                                  └─────────────────┘
```
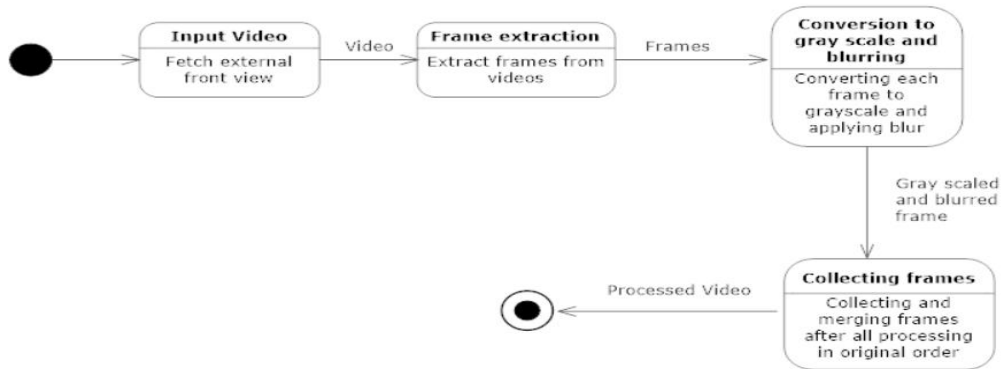
Canny Edge Detection State Chart Diagram-

```
 ●──Frames──→ ┌─────────────────┐                      ┌─────────────────┐
              │  Canny edge     │  Edges detected on   │    Masking      │  Edges detected
              │   detection     │   complete frame     │─────────────────│  on area of interest
              │─────────────────│ ───────────────────→ │  Masking out    │ ───────────────→ ◉
              │ Applying canny  │                      │ irrelevant area │
              │ algorithm on    │                      │  (only road     │
              │ each frame to   │                      │   required)     │
              │ detect edges on │                      └─────────────────┘
              │  whole frame    │
              └─────────────────┘
```

Hough Transform State Chart Diagram-

```
 ●──Frames with──→ ┌─────────────────┐  Line image   ┌─────────────────┐  Numpy array  ┌─────────────────┐  Road edges
   area of interest│ Processing Line │ (image with   │  Coordinates    │ ─────────────→ │ Average slope   │  detected
                   │   Segments      │ line segments)│─────────────────│               │  and intercept  │ ──────────→ ◉
                   │─────────────────│ ────────────→ │ Find coordinates│               │─────────────────│
                   │ Connecting points│              │  given numpy    │               │ Making left and │
                   │  satisfying     │               │   array of      │               │ right line based│
                   │ minimum voting  │               │ frames,slope and│               │ on average slope│
                   │   criteria      │               │   intercept     │               │ and intercept.  │
                   └─────────────────┘               └─────────────────┘               └─────────────────┘
```