

Stateflow for Automotive Applications

Prerequisites

MATLAB Fundamentals for Automotive Applications and *Simulink for Automotive System Design*.

Day 1 of 2	
Modeling Flow Charts	<p>Objective: Implement decision flows with flow charts.</p> <ul style="list-style-type: none">Junctions and transitionsFlow chart behaviorStateflow interfaceConditions and condition actionsChart dataCommon patterns
Modeling State Machines	<p>Objective: Implement state machines with state transition diagrams.</p> <ul style="list-style-type: none">State machine behaviorState and transition actionsChart initializationAction execution orderFlow charts within statesMealy and Moore charts
Hierarchical State Diagrams	<p>Objective: Implement hierarchical diagrams to improve the clarity of state machine designs.</p> <ul style="list-style-type: none">Superstates and substatesState dataHistory junctionTransition priorityAction execution order
Parallel State Diagrams	<p>Objective: Implement parallel states to model multiprocessing designs.</p> <ul style="list-style-type: none">Benefits of parallel statesChart/state decompositionParallel state behavior

Day 2 of 2

Using Events in State Diagrams	Objective: Use events within a Stateflow diagram to affect chart execution. Using events in state diagrams Broadcasting events Behavior of state diagrams that contain events Implicit events Temporal logic operators
Calling Functions from Stateflow	Objective: Create functions in a Stateflow chart out of Simulink blocks, MATLAB code, and flow charts. Types of functions Simulink functions MATLAB functions Graphical functions
Truth Tables and State Transition Tables	Objective: Create flow charts and state transition diagrams in tabular form. Truth tables Conditions, decisions, and actions State transition tables States, transitions, and actions
Component-Based Modeling in Stateflow	Objective: Reuse Stateflow designs, constrain chart semantics, and interact with structured Simulink data. Bus signals Data types Atomic subcharts Data mapping Chart reuse