

# Stateflow for Logic Driven System Modeling

## Prerequisites

*MATLAB Fundamentals* and *Simulink for System and Algorithm Modeling*.

### Day 1 of 2

<b>Modeling Flow Charts</b>	<p><b>Objective:</b> Implement decision flows with flow charts.</p> <ul style="list-style-type: none"><li>Junctions and transitions</li><li>Flow chart behavior</li><li>Stateflow interface</li><li>Conditions and condition actions</li><li>Chart data</li><li>Common patterns</li></ul>
<b>Modeling State Machines</b>	<p><b>Objective:</b> Implement state machines with state transition diagrams.</p> <ul style="list-style-type: none"><li>State machine behavior</li><li>State and transition actions</li><li>Chart initialization</li><li>Action execution order</li><li>Flow charts within states</li><li>Mealy and Moore charts</li></ul>
<b>Hierarchical State Diagrams</b>	<p><b>Objective:</b> Implement hierarchical diagrams to improve the clarity of state machine designs.</p> <ul style="list-style-type: none"><li>Superstates and substates</li><li>State data</li><li>History junction</li><li>Transition priority</li><li>Action execution order</li></ul>
<b>Parallel State Diagrams</b>	<p><b>Objective:</b> Implement parallel states to model multiprocessing designs.</p> <ul style="list-style-type: none"><li>Benefits of parallel states</li><li>Chart/state decomposition</li><li>Parallel state behavior</li></ul>

### Day 2 of 2

<b>Using Events in State Diagrams</b>	<p><b>Objective:</b> Use events within a Stateflow diagram to affect chart execution.</p> <ul style="list-style-type: none"><li>Using events in state diagrams</li><li>Broadcasting events</li><li>Behavior of state diagrams that contain events</li><li>Implicit events</li><li>Temporal logic operators</li></ul>
<b>Calling Functions from Stateflow</b>	<p><b>Objective:</b> Create functions in a Stateflow chart out of Simulink blocks, MATLAB code, and flow charts.</p> <ul style="list-style-type: none"><li>Types of functions</li><li>Simulink functions</li><li>MATLAB functions</li><li>Graphical functions</li></ul>
<b>Truth Tables and State Transition Tables</b>	<p><b>Objective:</b> Create flow charts and state transition diagrams in tabular form.</p> <ul style="list-style-type: none"><li>Truth tables</li><li>Conditions, decisions, and actions</li><li>State transition tables</li><li>States, transitions, and actions</li></ul>
<b>Component-Based Modeling in Stateflow</b>	<p><b>Objective:</b> Reuse Stateflow designs, constrain chart semantics, and interact with structured Simulink data.</p> <ul style="list-style-type: none"><li>Bus signals</li><li>Data types</li><li>Atomic subcharts</li><li>Data mapping</li><li>Chart reuse</li></ul>