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Hierarchical Context Specifications in LSC

- A natural graphical language for scenario based specifications.
- Extends message sequence charts (MSC).
- Executable semantics for multiple concurrent inter-object scenarios.
- Event Modalities: must / may / forbid.

Usage Examples and Future Work

Modeling complex reactive systems (e.g., home-assistant robot).

IoT as a group of multiple, orthogonal, contexts.

Solution: Modes

Scenarios are selectively associated with modes:

- Come into play when mode is activated.
- Terminate (gracefully) when mode ends.

A Concise Approach to Defining Contexts

Name: Client_Server_Communication
In Modes: comm
Parameters: c_id

Name: Incoming_Byte
In Modes: rcv
Parameters: c_id

The Research Questions

- Can we efficiently model a server that operates differently under diverse contexts such as RECEIVE and SEND?
- Can we incrementally add orthogonal contexts into our design (e.g., maintenance)?

Binding Charts to Context Objects

The dynamic creation of a mode_rcv instance enables context mode_rcv for this client.

A Concise Approach to Defining Contexts

Managing LSC Specifications Approach

- Use context-based feature model to reflect and manage the layers of abstractions.
- Easier navigation and reuse.
- Charts at all levels, not only at the leaves.

Mode Termination

Ensuring graceful termination of the context-dependent scenarios:
- Stopping them immediately.
- Run to completion.
- Decide on their own.