Table 1: Various specifications expressed in natural language and MTL.

Automatic Transmission		
	Natural Language	**MTL**
ϕ_1^{AT}	The engine speed never reaches $\bar{\omega}$.	$\Box(\omega < \bar{\omega})$
ϕ_2^{AT}	The engine and the vehicle speed never reach $\bar{\omega}$ and $\bar{v}$, resp.	$\Box((\omega < \bar{\omega}) \wedge (v < \bar{v}))$
ϕ_3^{AT}	There should be no transition from gear two to gear one and back to gear two in less than 2.5 sec.	$\Box((g_2 \wedge X g_1) \rightarrow \Box_{(0,2.5]} \neg g_2)$
ϕ_4^{AT}	After shifting into gear one, there should be no shift from gear one to any other gear within 2.5 sec.	$\Box((\neg g_1 \wedge X g_1) \rightarrow \Box_{(0,2.5]} g_1)$
ϕ_5^{AT}	When shifting into any gear, there should be no shift from that gear to any other gear within 2.5sec.	$\wedge_{i=1}^{4} \Box((\neg g_i \wedge X g_i) \rightarrow \Box_{(0,2.5]} g_i)$
ϕ_6^{AT}	If engine speed is always less than $\bar{\omega}$, then vehicle speed can not exceed $\bar{v}$ in less than T sec.	$\neg(\Diamond_{[0,T]}(v > \bar{v}) \wedge \Box(\omega < \bar{\omega}))$
ϕ_7^{AT}	Within T sec the vehicle speed is above $\bar{v}$ and from that point on the engine speed is always less than $\bar{\omega}$.	$\Diamond_{[0,T]}((v \geq \bar{v}) \wedge \Box(\omega < \bar{\omega}))$
ϕ_8^{AT}	A gear increase from first to fourth in under 10secs, ending in an RPM above $\bar{\omega}$ within 2 seconds of that, should result in a vehicle speed above $\bar{v}$.	$((g_1 \ \mathcal{U} \ g_2 \ \mathcal{U} \ g_3 \ \mathcal{U} \ g_4) \wedge \Diamond_{[0,10]}(g_4 \wedge \Diamond_{[0,2]}(\omega \geq \bar{\omega}))) \rightarrow \Diamond_{[0,10]}(g_4 \rightarrow X(g_4 \, \mathcal{U}_{[0,1]} \, (v \geq \bar{v})))$
Fault-Tolerant Fuel Control System		
	Natural Language	**MTL**
ϕ_1^{FCS}	The fuel flow rate should not be 0 for more than 1 sec within the next 100 sec period.	$\neg\Diamond_{[0,100]}\Box_{[0,1]}(FuelFlowRate = 0)$
ϕ_2^{FCS}	Always, if the air-to-fuel ratio output goes out of bounds, then within 1 sec it should settle inside the bounds and stay there for a sec.	$\Box((\lambda \text{ out of bounds}) \rightarrow \Diamond_{[0,1]}\Box_{[0,1]}\neg(\lambda \text{ out of bounds}))$

ω: Engine rotation speed, v: vehicle velocity, g_i : gear i, λ : air-to-fuel ratio.
Recommended values: $\bar{\omega}$: 4500, 5000, 5200, 5500 RPM; $\bar{v}$: 120, 160, 170, 200 mph; T : 4, 8, 10, 20 sec; λ bounds: 0.9 - 1.1.
$\Box$: Always, $\diamond$: Eventually, $\mathcal{U}$: Until