

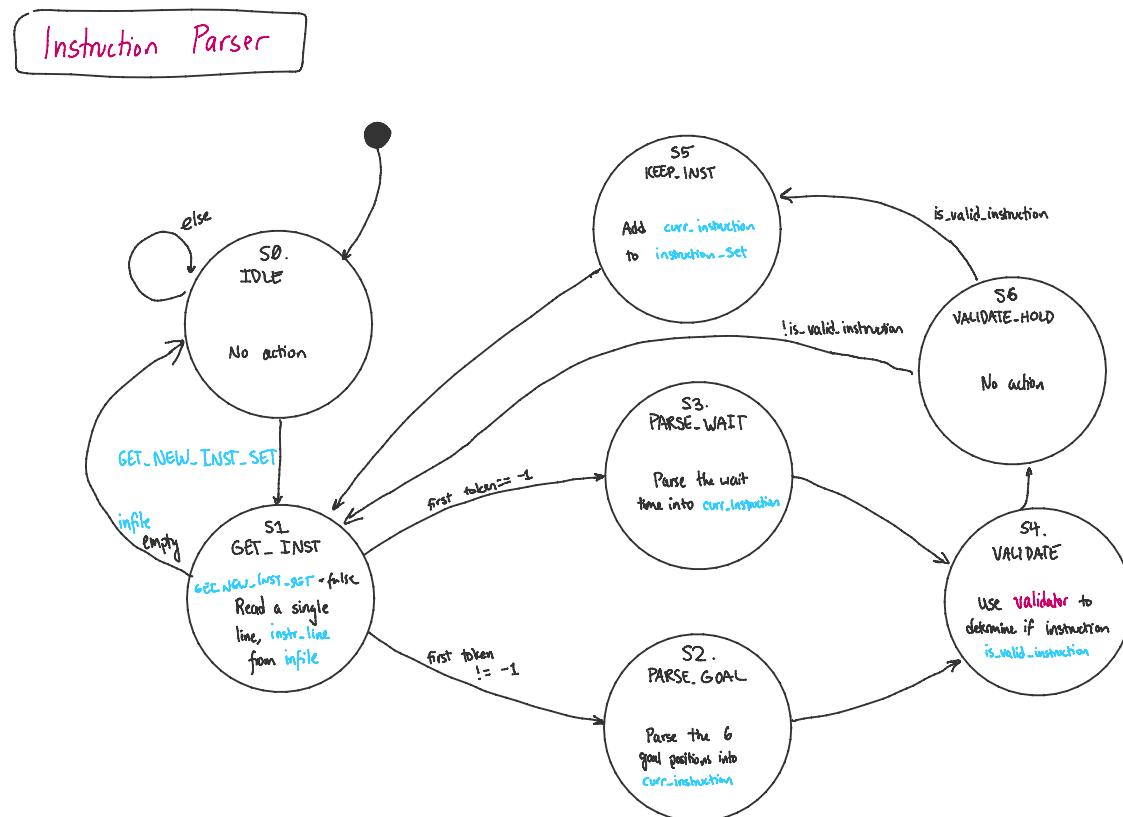
State Charts

Monday, April 1, 2019 11:52 PM

State Charts for T-RHEx prototype

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for Team 1, 

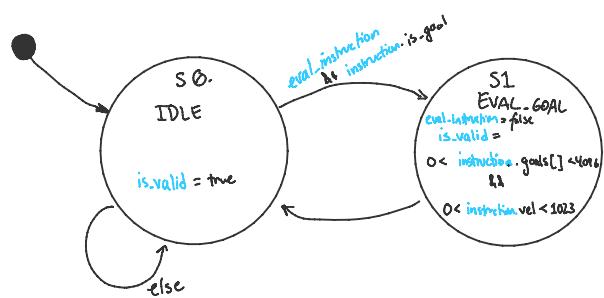
Last modified Apr 16 2019



Name	Scope	Type	Value Range	Description
infile	input	file	filepath on disk	file that contains the instruction set formatted according to Appendix A, below
instr_line	internal	string	See Appendix A for format	A single line ready to be parsed into a new instruction
curr_instruction	internal	object	N/A	post-processed instruction
is_valid_instruction	input	bool	{true, false}	indicates whether curr_instruction is valid or not
instruction_set	output	list	N/A	List of instructions as a format the system can understand

is-valid-instruction	input	bool	{true, false}	indicates whether curr-instruction is valid or not
instruction-set	output	list	N/A	List of instructions as a format the system can understand
GET-NEW-INST-SET	input	bool	{true, false}	External command for whether we need a new instruction set
Validator	internal	Validator	N/A	reference to the system validator

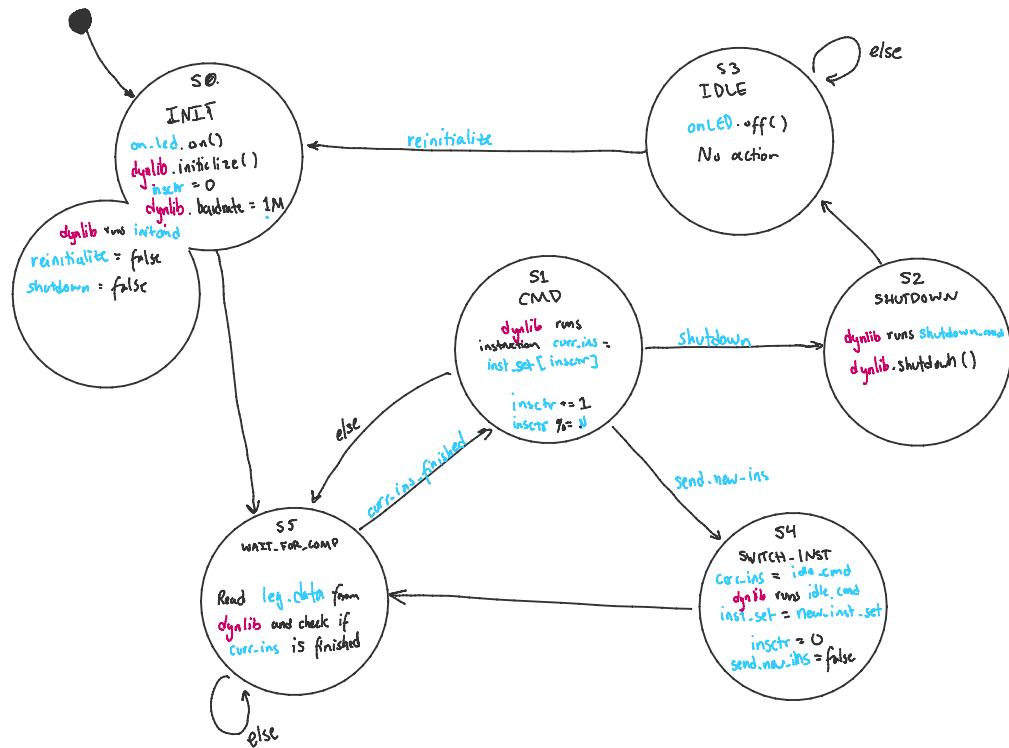
Validator



Signals

Name	Scope	Type	Value Range	Description
is.valid	output	bool	{true, false}	determination on whether an instruction is valid or not
instruction	input	object	N/A	instruction to be validated
eval.instruction	input	bool	{true, false}	indicator to validate an instruction

Microcontroller

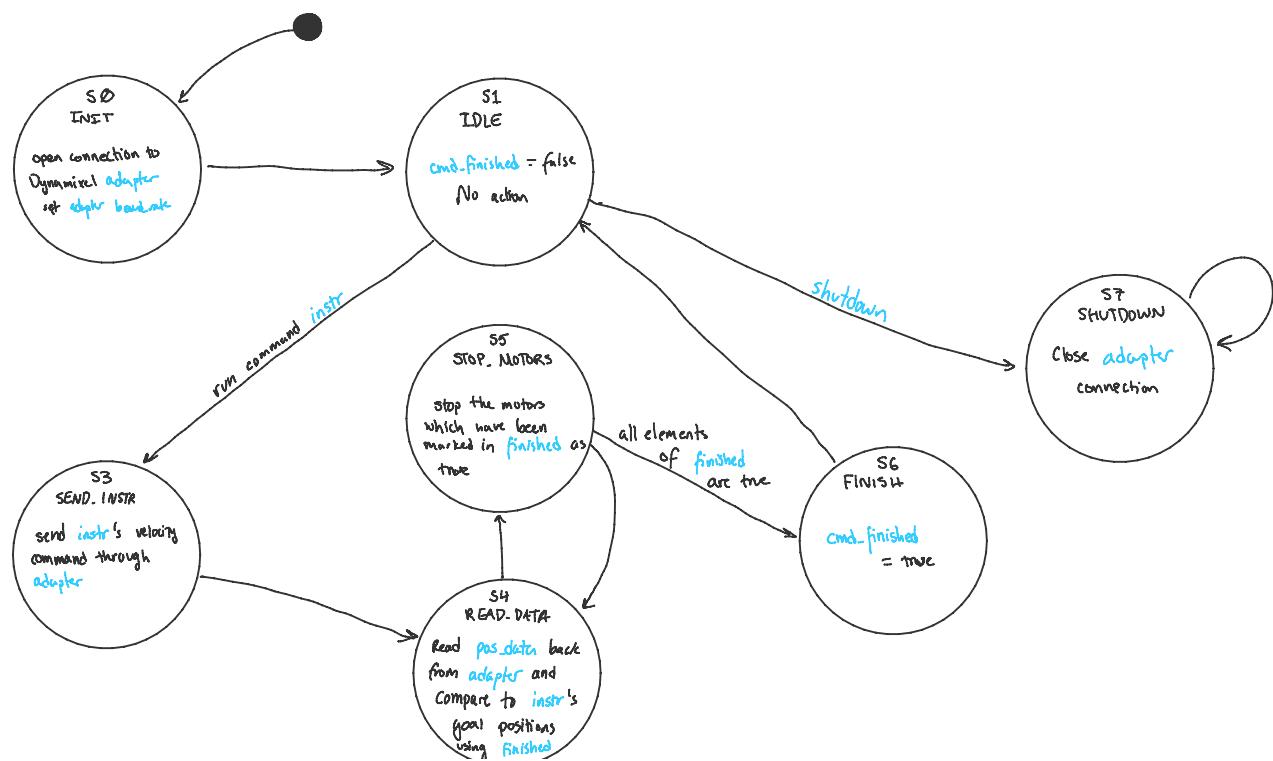


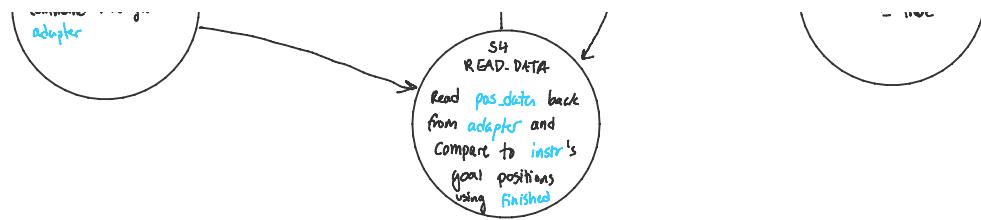
Signals

Signals

Name	Scope	Type	Value Range	Description
on-led	internal	LED controller	N/A	indicator LED for the system
dynlib	internal	Dynamixel Interface	N/A	Dynamixel Interface reference.
instr	internal	int	[0, N]	index of current instruction the dynlib is executing
initcmd	internal	Instruction	all legs to -90	command executed on initialization
reinitialize	input	bool	{true, false}	input to reinitialize the robot
shutdown	input	bool	{true, false}	command to shutdown the robot
leg-data	output	uint16_t[6]	range (uint16_t)	array representing current positions of each leg
curr-ins	output	Instruction	N/A	instruction the dynlio is currently executing
curr-ins-finished	input	bool	{true, false}	indicator whether the current instruction has finished executing.
inst-set	input	array<Instruction>	N/A	the set of instructions to execute
N	input	int	range (int)	the length of the instruction set
send-new-ins	input	bool	{true, false}	indicator that we want to change instruction sets
idle-cmd	internal	Instruction	all legs to -90	instruction for transitioning between instruction sets
new-inst-set	input	array<Instruction>	N/A	Replacement instruction set
shutdown-cmd	internal	Instruction	all legs + 90	instruction for when we're decided to shutdown the robot

Dynamixel Interface

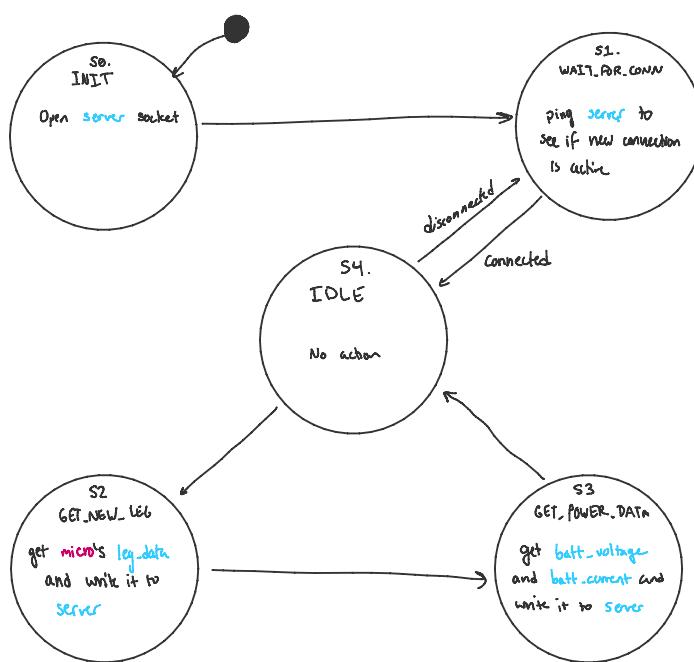




Signals

Name	Scope	Type	Value Range	Description
adapter	internal	Dynamixel::PacketHandler	N/A	the actual interface to the dynamixel servos
cmd-finished	output	bool	{true, false}	indicator of whether the current command has finished
desired_baud	input	uint32	range(uint32)	the desired baud rate for the system to communicate
instr	input	Instruction	N/A	instruction to run
pos-data	output	uint16[6]	range(uint16)	array for reporting leg position data
finished	output	bool[6]	{true, false}	indicators of whether a particular leg has reached its goal
shutdown	input	bool	{true, false}	command for shutting down the interface

Network Interface



Signals

Signals

Name	Scope	Type	Value Range	Description
Server	internal	socket	N/A	socket for communicating with the visualization client
micro	internal	Microcontroller	N/A	Microcontroller instance for getting stats
leg-data	input	uint16-t[6]	range(uint16)	leg data obtained from the micro
batt-voltage	internal	uint32	range(uint32)	battery voltage in millivolts
batt-current	internal	uint32	range(uint32)	battery current draw in millamps

Component Diagram

