

Instruction Graph Grammar

Andrew Benson

Program	p	$::=$	$\mathbf{P}(vs, n)$	programs
Vertices	vs	$::=$	$\mathbf{S}(v)$	singleton
			$v::vs$	cons
Vertex	v	$::=$	$\mathbf{V}(n, c)$	vertex
Content	c	$::=$	$\mathbf{do\ } a\ \mathbf{then\ } n$	single action
			$\mathbf{do\ } a\ \mathbf{until\ } cnd\ \mathbf{then\ } n$	open loop action
			$\mathbf{if\ } cnd\ \mathbf{then\ } n\ \mathbf{else\ } n$	conditional
			$\mathbf{goto\ } n$	goto
			\mathbf{end}	termination

We let $n \in \mathbb{Z}$, the integers.

We let $a \in \mathbf{Actions}$, a sort describing classes of actions, like movement, that a robot might be able to perform. A grammar defining $\mathbf{Actions}$ is assumed.

We let $cnd \in \mathbf{Conditions}$, a sort describing classes of conditions, like whether an object is some distance ahead, that a robot might be able to detect. A grammar defining $\mathbf{Conditions}$ is assumed.