

# PICTORIAL VERSION OF THE RPAL SUBTREE TRANSFORMATIONAL GRAMMAR

$\begin{array}{c} \text{let} \\ / \quad \backslash \\ = \quad P \\ / \quad \backslash \\ X \quad E \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{lambda} \quad E \\ / \quad \backslash \\ X \quad P \end{array}$	$\begin{array}{c} \text{where} \\ / \quad \backslash \\ P \quad = \\ / \quad \backslash \\ X \quad E \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{lambda} \quad E \\ / \quad \backslash \\ X \quad P \end{array}$
$\begin{array}{c} \text{tau} \\   \\ E++ \end{array} \Rightarrow \begin{array}{c} ++\text{gamma} \\ / \quad \backslash \\ \text{gamma} \quad E \\ / \quad \backslash \\ \text{aug} \quad .\text{nil} \end{array}$	$\begin{array}{c} -> \\ / \quad   \quad \backslash \\ B \quad T \quad E \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{gamma} \quad \text{nil} \\ / \quad \backslash \\ \text{gamma} \quad \text{lambda} \\ / \quad \backslash \quad / \quad \backslash \\ \text{gamma} \quad \text{lambda} \quad () \quad E \\ / \quad \backslash \quad / \quad \backslash \\ \text{Cond} \quad B \quad () \quad T \end{array}$
$\begin{array}{c} \text{not} \\   \\ E \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{not} \quad E \end{array}$	$\begin{array}{c} \text{neg} \\   \\ E \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{neg} \quad E \end{array}$
$\begin{array}{c} \text{within} \\ / \quad \backslash \\ = \quad = \\ / \quad \backslash \quad / \quad \backslash \\ X1 \quad E1 \quad X2 \quad E2 \end{array} \Rightarrow \begin{array}{c} = \\ / \quad \backslash \\ X2 \quad \text{gamma} \\ / \quad \backslash \\ \text{lambda} \quad E1 \\ / \quad \backslash \\ X1 \quad E2 \end{array}$	$\begin{array}{c} \text{rec} \\   \\ = \\ / \quad \backslash \\ X \quad E \end{array} \Rightarrow \begin{array}{c} = \\ / \quad \backslash \\ X \quad \text{gamma} \\ / \quad \backslash \quad / \quad \backslash \\ \text{Ystar} \quad \text{lambda} \\ / \quad \backslash \\ X \quad E \end{array}$
$\begin{array}{c} \text{fcn\_form} \\ / \quad   \quad \backslash \\ P \quad V+ \quad E \end{array} \Rightarrow \begin{array}{c} = \\ / \quad \backslash \\ P \quad +\text{lambda} \\ / \quad \backslash \\ V \quad .E \end{array}$	$\begin{array}{c} \text{lambda} \\ / \quad \backslash \\ X++i \quad E \end{array} \Rightarrow \begin{array}{c} \text{lambda} \\ / \quad \backslash \\ \text{Temp} \quad ++\text{gamma} \\ / \quad \backslash \quad / \quad \backslash \\ \text{lambda} \quad \text{gamma} \\ / \quad \backslash \quad / \quad \backslash \\ X.i \quad .E \quad \text{Temp} \quad <\text{INTEGER:i}> \end{array}$
$\begin{array}{c} \text{lambda} \\ / \quad \backslash \\ V++ \quad E \end{array} \Rightarrow \begin{array}{c} ++\text{lambda} \\ / \quad \backslash \\ V \quad .E \end{array}$	$\begin{array}{c} \text{Op} \\ / \quad \backslash \\ E1 \quad E2 \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{gamma} \quad E2 \\ / \quad \backslash \\ \text{Op} \quad E1 \end{array}$
$\begin{array}{c} \text{and} \\   \\ =++ \\ / \quad \backslash \\ X \quad E \end{array} \Rightarrow \begin{array}{c} = \\ / \quad \backslash \\ , \quad \text{tau} \\ / \quad \backslash \quad / \quad \backslash \\ X++ \quad E++ \end{array}$	$\begin{array}{c} @ \\ / \quad   \quad \backslash \\ E1 \quad N \quad E2 \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{gamma} \quad E2 \\ / \quad \backslash \\ N \quad E1 \end{array}$
$\begin{array}{c} \text{Uop} \\   \\ E \end{array} \Rightarrow \begin{array}{c} \text{gamma} \\ / \quad \backslash \\ \text{Uop} \quad E \end{array}$	<p>Op in [aug,or,&amp;,+,-,/,**,gr ...]</p> <p>Uop in [not, neg]</p>