P P ¶ P $\mathscr{P}$ P P P $\mathbf{P}$

the signatures of the transition relations:

$T \in \mathbb{P}(Q \times V \times Q)$

$T \in V \to P(Q \times Q)$

$T \in Q \times Q \to P(V)$

$T \in Q \times V \to P(Q)$

$T \in Q \to P(V \times Q)$

for example, the function $T \in Q \to P(V \times Q)$ is defined as $T(p) = \{(a,q) : (p,a,q) \in T\}$

ε-transition relation:

$E \in P(Q \times Q)$

$E \in Q \to P(Q)$

$T \in P(Q \times V \times Q), T = \{(s,a,q)\}$

$T(s) \in Q \to P(V \times Q), T(s) = \{(a,q) : (s,a,q) \in T\}$

$Q_{map} : P(Q \times V), Q_{map} = \{(q,a) : (s,a,q) \in T\}$

$Q_{map}(q) = \{a : (s,a,q) \in T\}$

${Q_{map}}^{-1} : V \nrightarrow P(Q), {Q_{map}}^{-1} = \{(a,q) : (s,a,q) \in T\}$

According to Convention A.4 (Tuple projection):

$\bar{\pi}_2(T) = \{(s,q) : (s,a,q) \in T\}$

$Q_{map} = (\bar{\pi}_1(T))^R, Q_{map} = \{(a,q) : (s,a,q) \in T\}^R = \{(q,a) : (s,a,q) \in T\}$

$f(a) = (f(a^R))^R$

Prefix-closure: Let $L \subseteq V^*$,then

$$\overline{L} := \{s \in V^* : (\exists t \in V^*)[st \in L]\}$$

In words, the prefix closure of L is the language denoted by $\overline{L}$ and consisting of all the prefixes in L. In general, $L \subseteq \overline{L}$.

L is said to be prefix-closed if $L = \overline{L}$. Thus language L is prefix-closed if any prefix of any string in L is also an element of L.

$L_1 = \{\varepsilon, a, aa\}, L_1 = \overline{L_1}, L_1$ is prefix-closed.
$L_2 = \{a, b, ab\}, \overline{L_2} = \{\varepsilon, a, b, ab\}, L_2 \subset \overline{L_2}, L_2$ is not prefix closed.

Post-language: Let $L \subseteq V^*$ and $s \in L$. Then the post-language of L after s, denoted by L/s, is the language

$$L/s := \{t \in V^* : st \in L\}$$

By definition, $L/s = \emptyset$ if $s \notin \overline{L}$.

Definition A.15 (Left derivatives): Given language $A \subseteq V^*$ and $w \in V^*$ we define the left derivative of A with respect to w as:

$$w^{-1}A = \{x \in V^* : wx \in A\}$$

Sometimes derivatives are written as $D_w A$ or as $\frac{dA}{dw}$. Right derivatives are analogously defined. Derivatives can also be extended to $B^{-1}A$ where B is also a language.

Kleene-closure: Let $L \subseteq V^*$, then

$$L^* := \{\varepsilon\} \cup L \cup LL \cup LLL \cup \cdots$$

This is the same operation that we defined above for the set V, except that now it is applied to set L whose elements may be strings of length greater than one. An element of L^* is formed by the concatenation of a finite (but possibly arbitrarily large) number of elements of L; this includes the concatenation of ”zero” elements, that is the empty string ε. Note that $*$ operation is idempotent: $(L^*)^* = L^*$.

中文示例

Theorem 1 *content...*

$\notin \beta$

Theorem 2

Definition 1