(Q_i, Σ, δ_i) to be isomorphic to $\mathcal{A}$ for any $i \in \mathbb{N}$. First we describe a construction that is a ciphertext.
Define an automaton $\mathcal{P} = (\{p_1, p_2, .., p_{|u|+1}\}, \{0,1\}, \gamma)$ where γ is defined as follows: for $i \in \{1, .., |u|+1\}$ set $\gamma(p_{i-1}, u_i) = p_i$, where u_i is i-th letter of a word u. In other words we encode our plaintext in the form of a directed path, where consecutive edges correspond to the consecutive letters of the word u. Encryption consists of four steps:

1. Compute $\mathcal{B} = \bigcup_{i=1}^{|u|+1} \mathcal{A}_i$ and denote $\bigcup_{i=1}^{|u|+1} \delta_i = \rho$, $P = \bigcup_{i=1}^{|u|+1} Q_i$
2. for any transition (p_i, p_j) in $\mathcal{P}$, labelled with a letter $x \in \{0,1\}$ choose any pair of states $q^i \in Q_i$ and $q^j \in Q_j$, and set $\rho(q^i, x) = q^j$,
3. for all $i \in \{1, .., |u|+1\}$ and for every letter $a \in \Sigma$, if $q^i \in Q_i$ and $\delta(q^i, a)$ is undefined, then choose any j and any state $q^j \in Q_j$ and set $\rho(q^i, a) = q^j$,
4. for all $i \in \{1, .., |u|+1\}$ choose $k_i \in \mathbb{N}$. Choose k_i pairs (q_p^i, q_r^i) and a letter $x \in \{0,1\}$ and define $\rho(q_p^i, x) = q_r^i$

Automaton $\mathcal{B}$ is our ciphertext. It is straightforward from the construction, that computing such automaton is polynomial in terms of Q, Σ and length of the plaintext. We also state two obvious observations.

Fact 2. *After removing letters $x \in \{0,1\}$ from automaton $\mathcal{B}$ we obtain a DFA over Σ.*

Fact 3. *After removing letters $a \in \Sigma$ from automaton $\mathcal{B}$ we obtain a digraph labelled with letters $x \in \{0,1\}$ with longest path between the vertices of length 1.*

Procedure of encrypting the word 01 is depicted on figures 3, 4, 5 and 6. As a public key we take the automaton depicted on Figure 2.