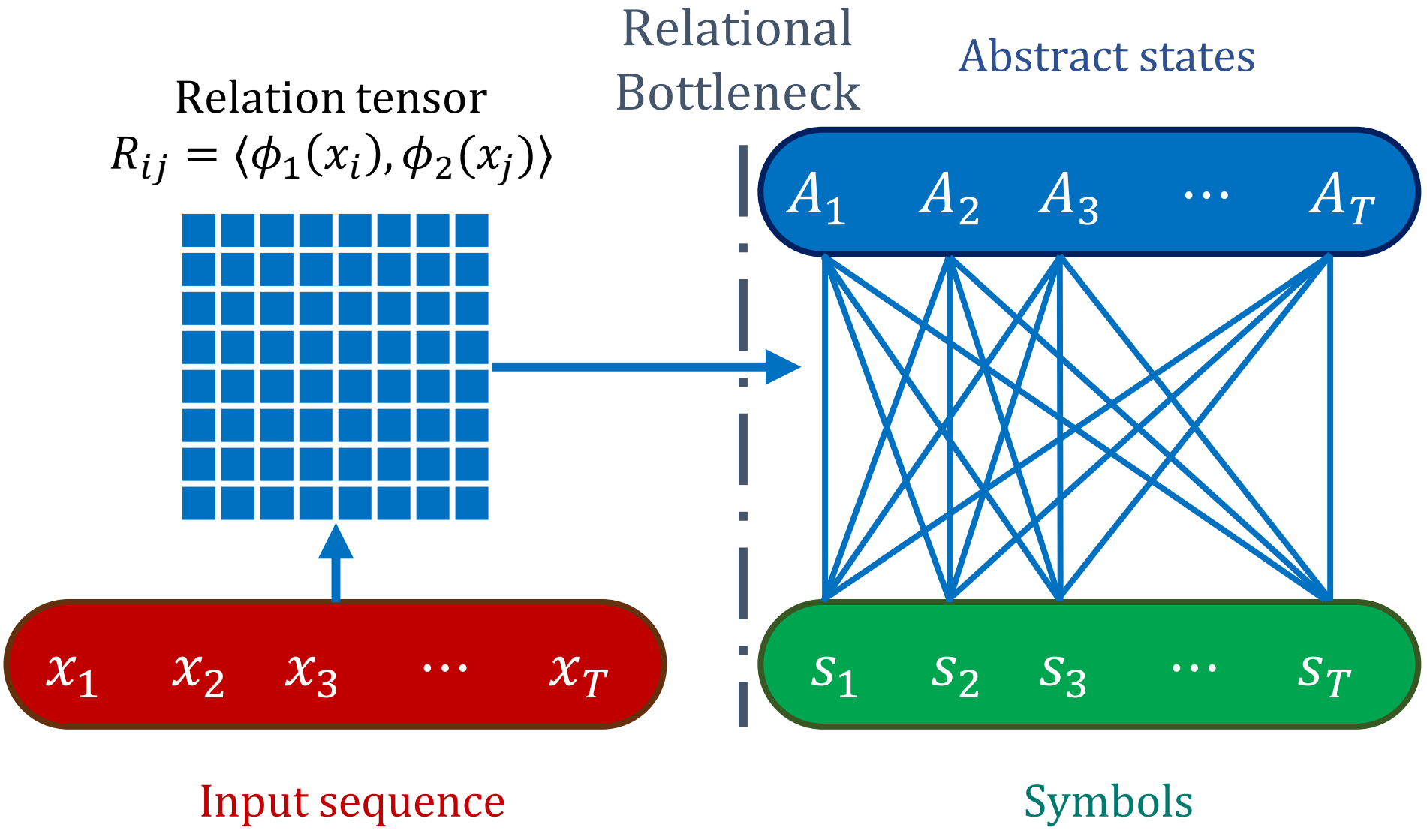
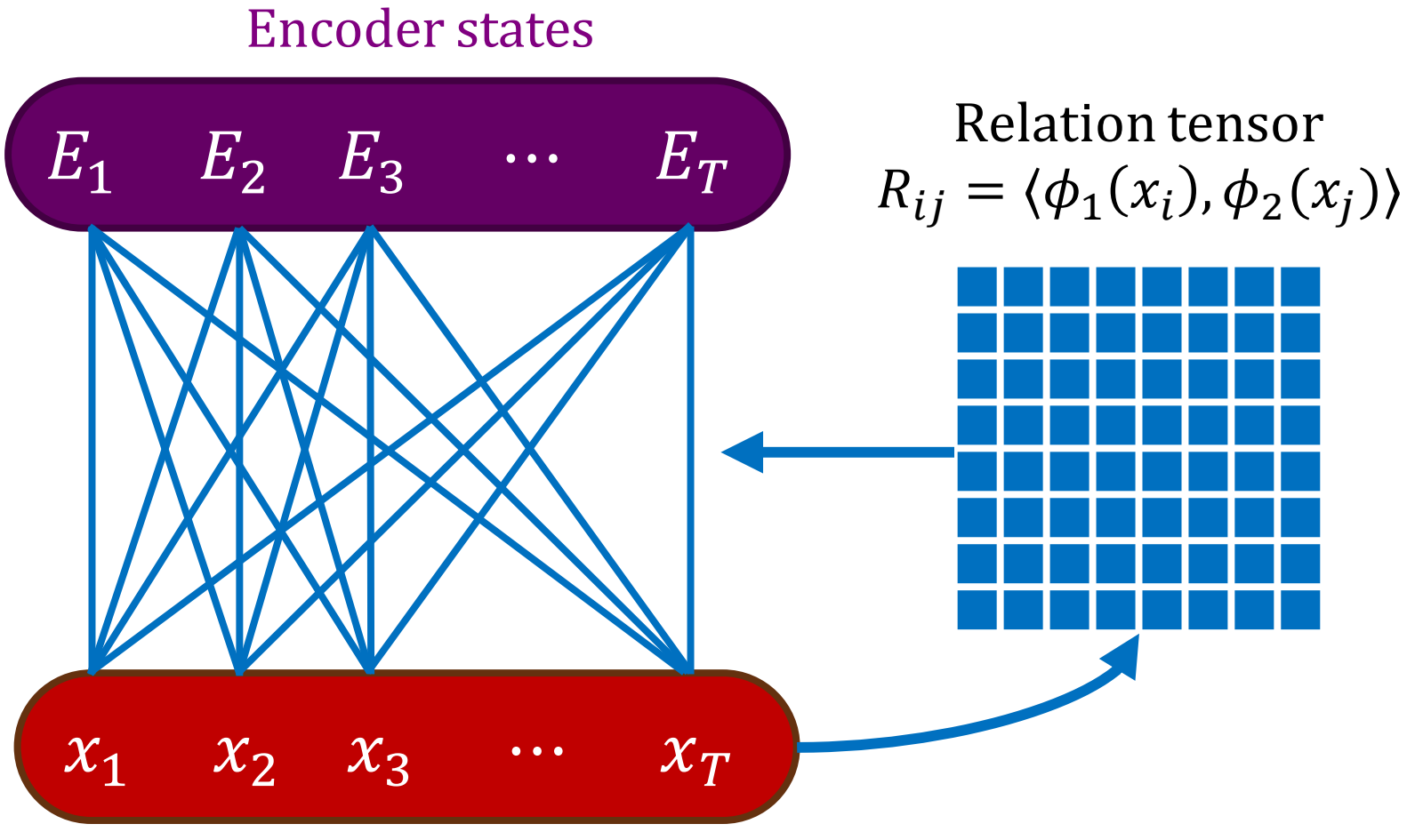
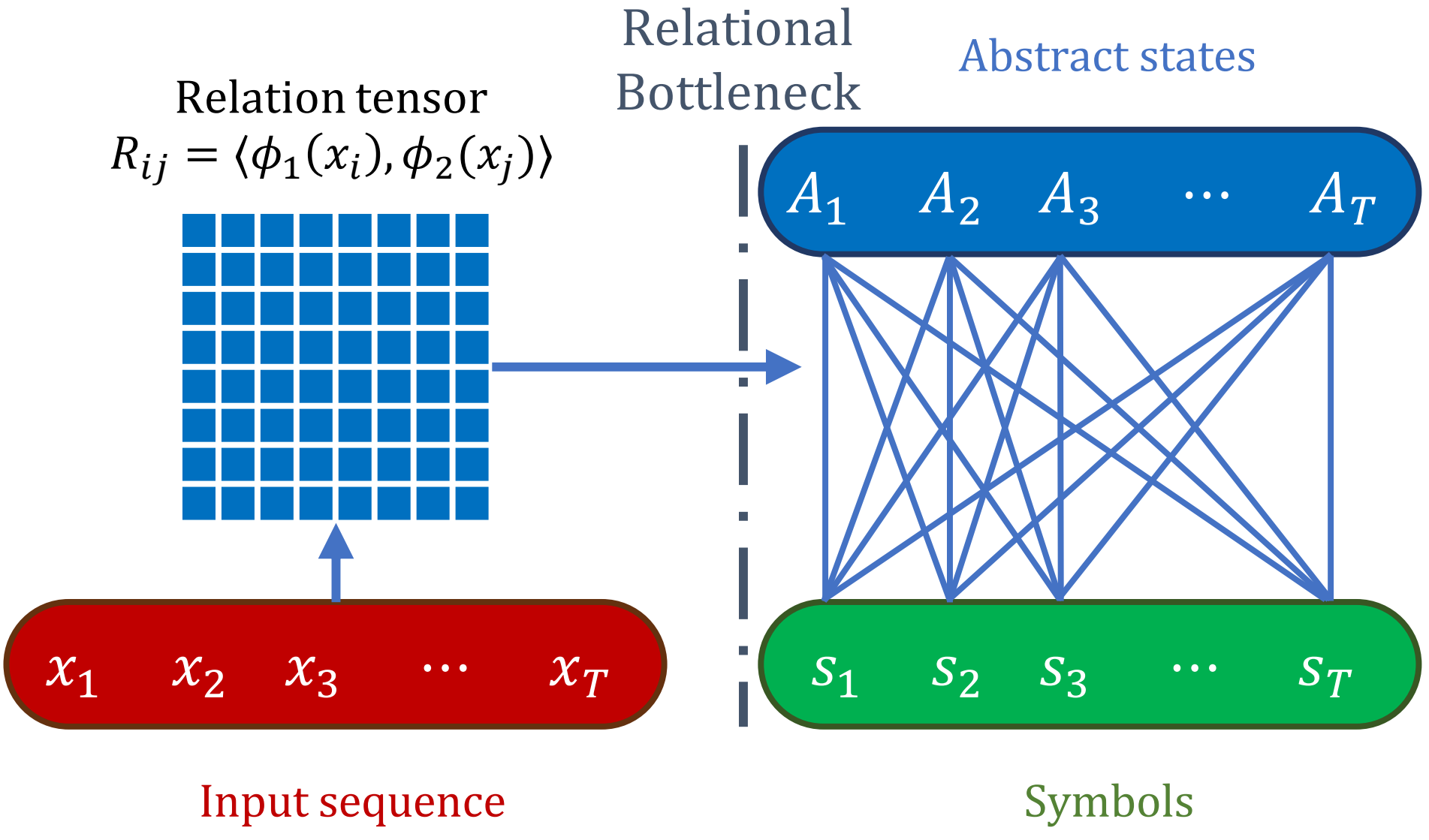

Relational Bottleneck
Abstract states
Relation tensor
$R_{ij} = \langle \phi_1(x_i), \phi_2(x_j) \rangle$
A_1 A_2 A_3 ⋯ A_T
x_1 x_2 x_3 ⋯ x_T
s_1 s_2 s_3 ⋯ s_T
Input sequence
Symbols


Encoder states
E_1 E_2 E_3 $\cdots$ E_T
Relation tensor
$R_{ij} = \langle \phi_1(x_i), \phi_2(x_j) \rangle$
x_1 x_2 x_3 $\cdots$ x_T
Input sequence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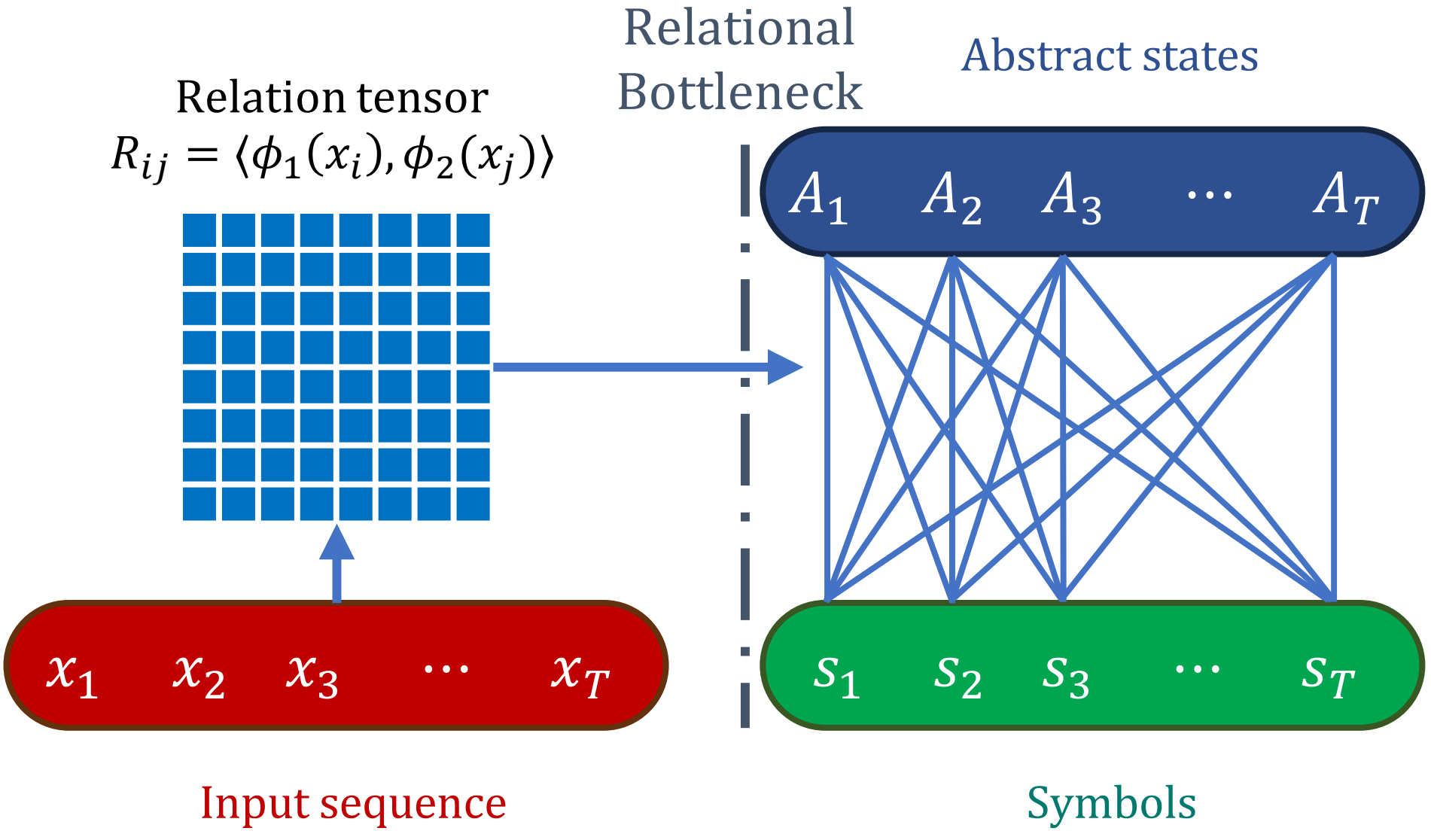
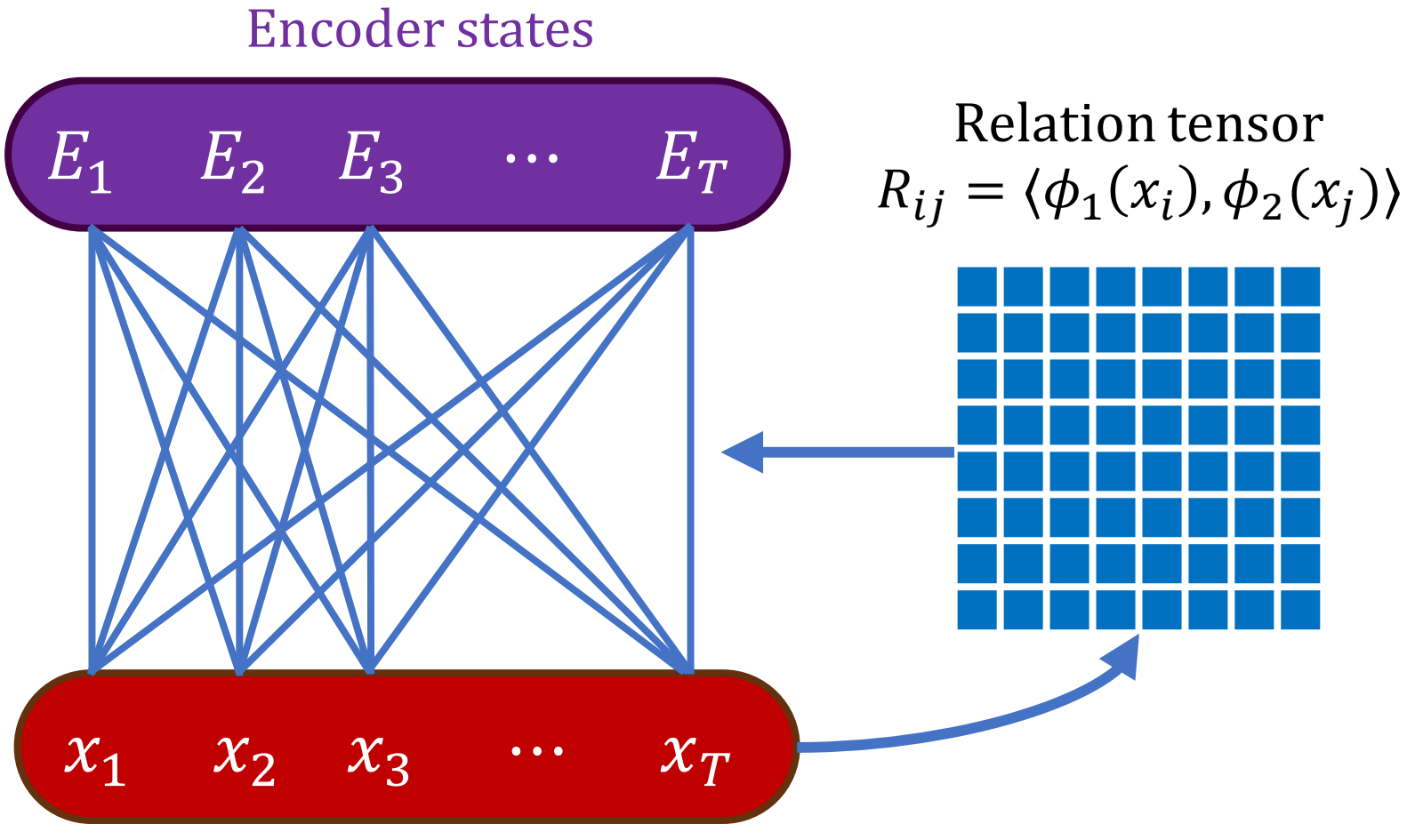
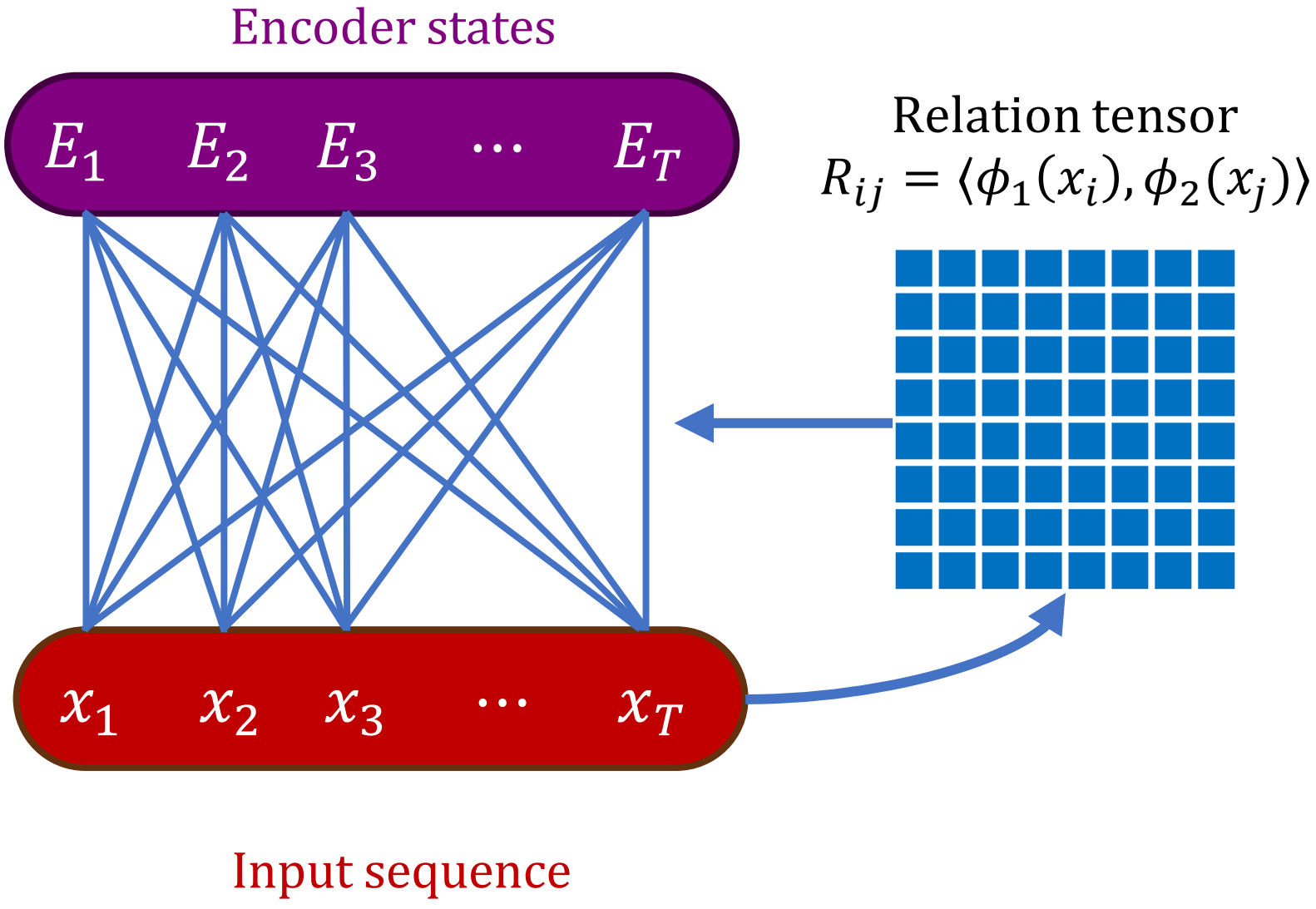
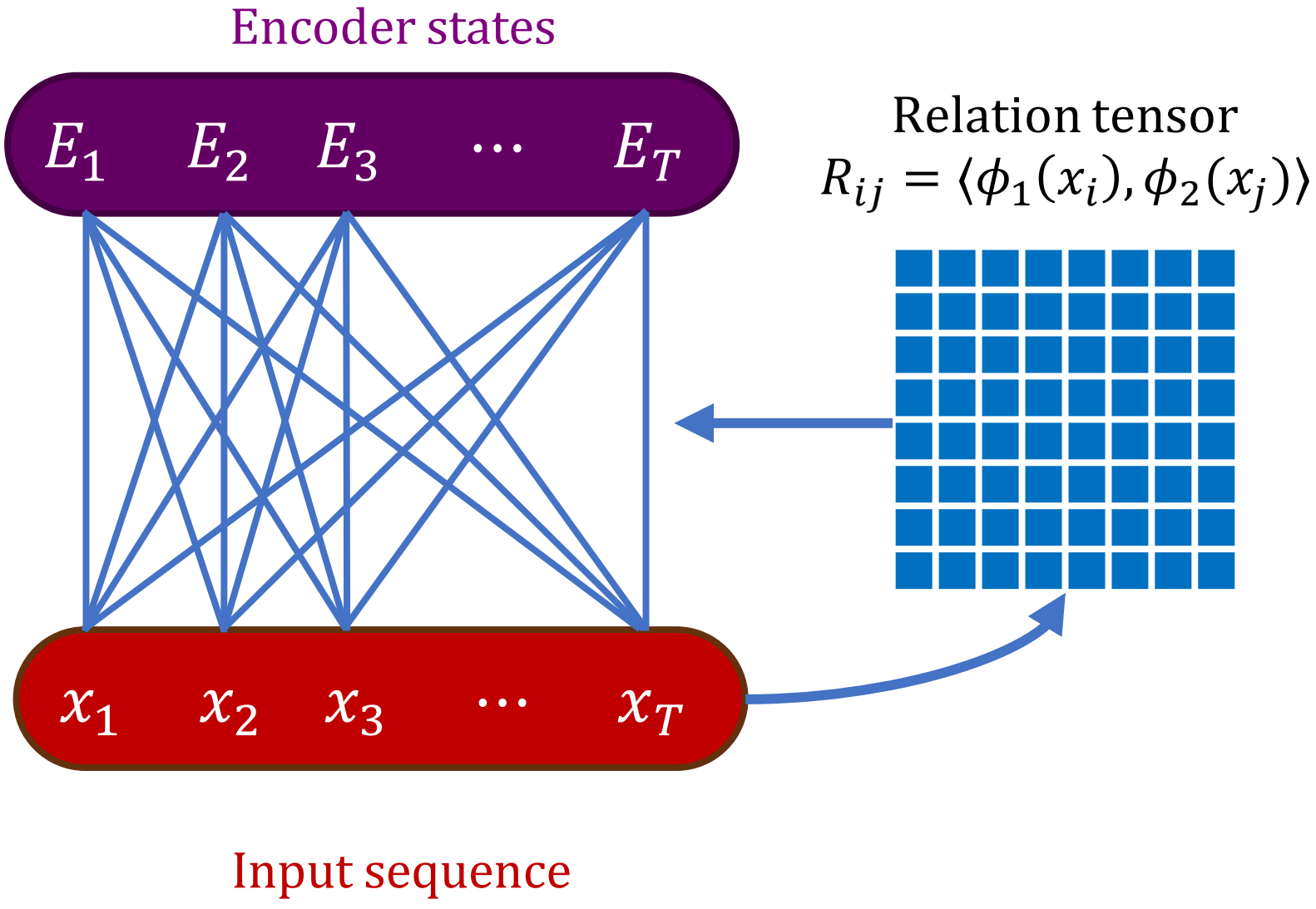
x_1 x_2 x_3 ⋯ x_T
s_1 s_2 s_3 ⋯ s_T
Input sequence
Symbols


Relational
Bottleneck
Abstract states
Relation tensor
$R_{ij} = \langle \phi_1(x_i), \phi_2(x_j) \rangle$
A_1 A_2 A_3 ⋯ A_T
x_1 x_2 x_3 ⋯ x_T
s_1 s_2 s_3 ⋯ s_T
Input sequence
Symbols


Encoder states
E_1 E_2 E_3 $\cdots$ E_T
Relation tensor
$R_{ij} = \langle \phi_1(x_i), \phi_2(x_j) \rangle$
x_1 x_2 x_3 $\cdots$ x_T
Input sequence


Encoder states
E_1 E_2 E_3 $\cdots$ E_T
Relation tensor
$R_{ij} = \langle \phi_1(x_i), \phi_2(x_j) \rangle$
x_1 x_2 x_3 $\cdots$ x_T
Input sequence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