

Asynchronous Factored Translation

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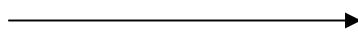
Current System

Translating

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Phrase Table 1

Je vous achète



I am buying you

Phrase Table 2

PRO PRO VB



PRO VB VB PRO

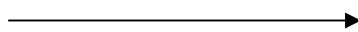
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Translating

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Phrase Table 1

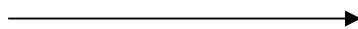
Je vous achète



I am buying you

Phrase Table 2

PRO PRO VB



PRO VB VB PRO

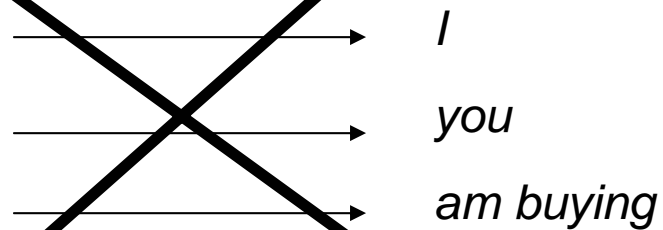
Limitations

Synchronous

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Phrase Table 1

<i>Je</i>
<i>vous</i>
<i>achète</i>



Phrase Table 2

<i>PRO PRO VB</i>



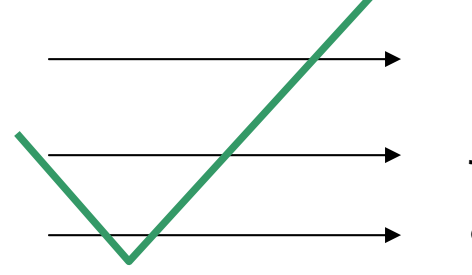
Asynchronous Translation

Synchronous

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Phrase Table 1

<i>Je</i>	→	<i>I</i>
<i>vous</i>	→	<i>you</i>
<i>achète</i>	→	<i>am buying</i>



Phrase Table 2

<i>PRO PRO VB</i>	→	<i>PRO VB VB PRO</i>
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Tiling

Current System

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Tiling

Current System

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Tiling

Current System

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Future

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Tiling

Current System

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Future

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Tiling

Current System

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Future

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Tiling

Current System

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Future

Je	vous	achète	un	chat
PRO	PRO	VB	ART	NN

Long Templates

Je vous achète un chat

PRO PRO VB ART NN

Phrase Table 1

<i>Je</i>	→	<i>I</i>
<i>Vous</i>	→	<i>am buying</i>
<i>achète</i>	→	<i>You</i>
<i>un chat</i>	→	<i>a cat</i>

Phrase Table 2

PRO PRO VB ART NN → PRO VB VB PRO ART NN

Long Templates

Je	vous	achète	un chat
PRO	PRO	VB	ART NN

Phrase Table 1

Je	→	<i>I</i>
Vous	→	<i>you</i>
achète	→	<i>am buying</i>
un chat	→	<i>a cat</i>

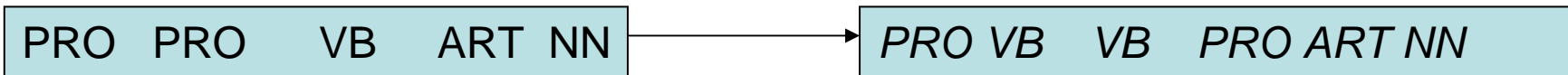
Phrase Table 2

PRO PRO VB ART NN	→	PRO VB VB PRO ART NN
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What Does it Solve?

- Better reordering strategy
 - Use templates to fit surface forms into correct positions

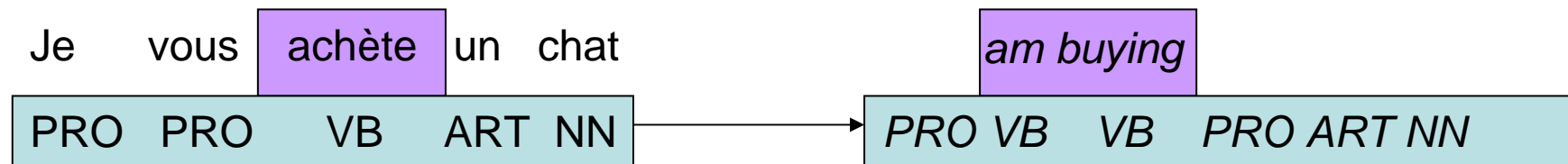
Je vous achète un chat



- Reduce search space that hypothesis expansion of surface forms has to search
 - Only expand surface form which is consistent with POS factor

What Does it Solve?

- Better reordering strategy
 - Use templates to fit surface forms into correct positions



- Reduce search space that hypothesis expansion of surface forms has to search
 - Only expand surface form which is consistent with POS factor

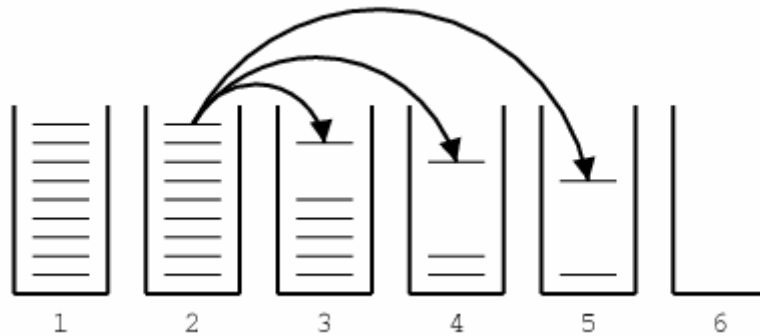
Implementation

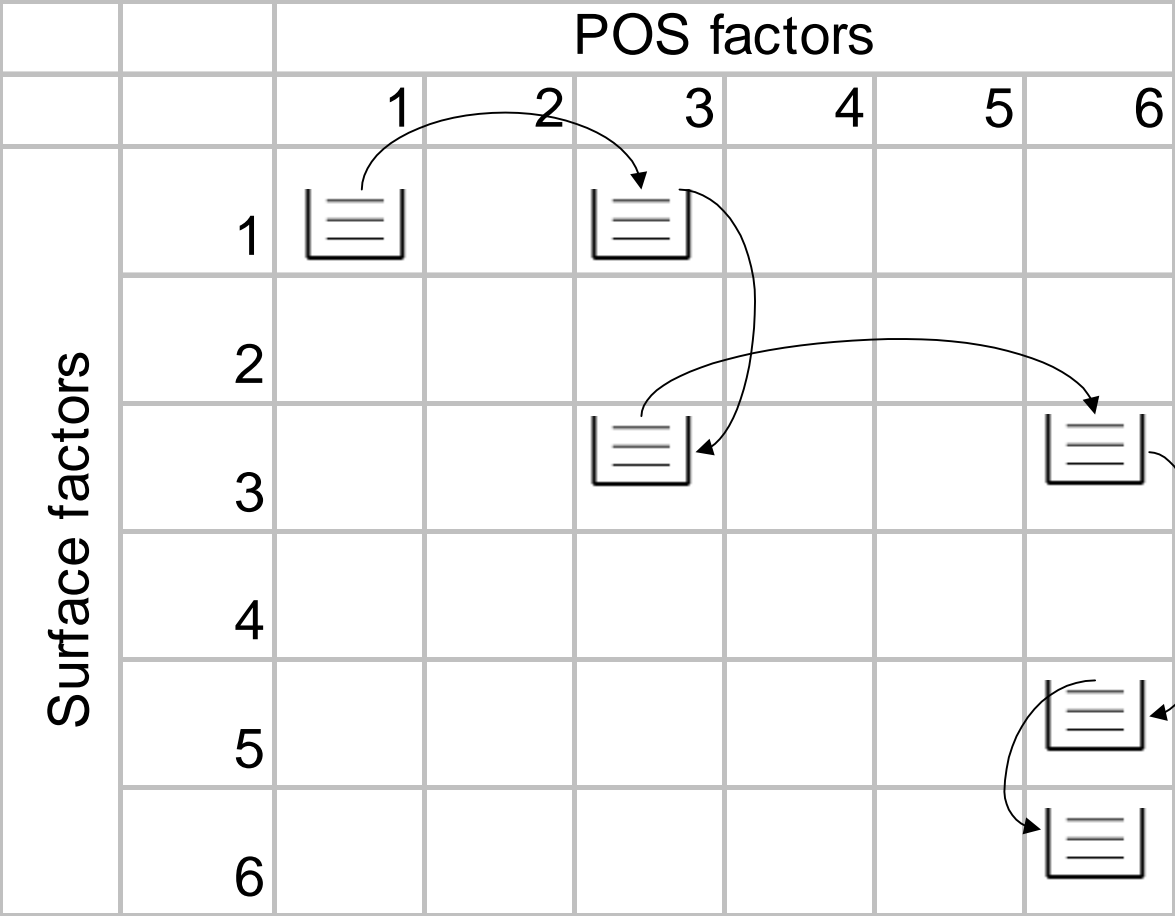
Decoder is fork of main (synchronous) code

Uses same training and tuning algorithms

Designed for flexibility while researching

Synchronous Stack Layout





Asynchronous factored decoder

coming soon...