

## Examples of System Outputs

Below are example outputs of our syntax-based SMT models (Dependency and Constituency) and comparison models. We used the [Microsoft COCO Captions dataset](#) [1] as training and testing data. The ranks denote relative ranks (1 is best) and were obtained from human annotators using Amazon's MT.

MS COCO 2015 Test Images						
	Rank	Output	Rank	Output	Rank	Output
	5	a couch has a couch	4	a dog has a frisbee	5	a zebra is eating a zebra
	4	the room has a couch	3	a dog holding a frisbee	3	two zebras eating grass
	1	a dog sitting on a couch	3	a dog holding a frisbee	2	zebras standing in a field
MS COCO 2015 Test Images	2	dog laying on a couch	2	a dog catching a frisbee	1	zebras are standing in a field
	3	a dog is looking at something	2	a dog catching a frisbee in its mouth	4	a herd of zebra standing in a safari
						
	Rank	Output	Rank	Output	Rank	Output

<b>Template</b>	2	a person is above a bed	2	an airplane is near a car	3	a tv is near a cat
<b>Tuples</b>	5	a man sitting in bed	5	a airplane sitting on a street	4	a tv sitting on top
<b>Dependency</b>	3	a man sitting on a bed	3	a airplane parked next to a car	2	a cat sitting next to a tv
<b>Constituency</b>	4	a girl is sitting on a bed	4	a airplane parked next to a car	5	a cat that is looking at a television
<b>Human</b>	1	a man bounces on the bed	1	a large plane with a red tail	1	a cat is showing its back to a tv screen

MS COCO  
2015 Test  
Images



	<b>Rank</b>	<b>Output</b>	<b>Rank</b>	<b>Output</b>	<b>Rank</b>	<b>Output</b>
<b>Template</b>	2	a refrigerator is below a microwave	1	a tv is near a laptop	2	a tie is near a pizza
<b>Tuples</b>	4	a refrigerator sits in a kitchen	5	a tv sitting on top	3	a man holding a pizza
<b>Dependency</b>	3	a refrigerator sits in a kitchen	3	a tv sitting on a desk	4	a man eating pizza
<b>Constituency</b>	5	a kitchen counter	2	a laptop on a desk	4	a man eating pizza
<b>Human</b>	1	a brown refrigerator sits up against a wall	4	a compilation of pictures creating a room	1	a calzone or oval pizza with cheese, ham and bacon

[1] Xinlei Chen, Hao Fang, Tsung-Yi Lin, Ramakrishna Vedantam, Saurabh Gupta, Piotr Dollar, C. Lawrence Zitnick. 2015. Microsoft COCO Captions: Data Collection and Evaluation Server. [arxiv](#)