























































Transliteration:		Transliteration System Acc		MRR
Transiteration.	(Gold	(Goldwasser and Roth 2008) N/A		89.4
	Align	Alignment + Learning LCLR		85.7
	LCLF			95.4
		LCLR		66.8
Paraphrase Identificati	on:*			
Alignment + Learning			72.00	
LCLR			72.75	















Experimental Result













Empirical Evaluation [CoNLL'10,ACL'11]

Key Question: Can we learn from this type of supervision?

Algorithm	# training structures	Test set accuracy
No Learning: Initial Objective Fn Binary signal: Protocol I	0 0	22.2% 69.2 %
Binary signal: Protocol II	0	73.2 %
WM*2007 (fully supervised – uses gold structures)	310	75 %
*[14/4] V W W = = = = = = = = 200		
"[WM] YW. Wong and R. Mooney. 200. parsing with lambda calculus. ACL.	/. Learning synchronous (grammars for semantic
Current emphasis: Learning instructions for games	to understand natuvia response based	grammars for semantic Iral language learning







Empirical Evaluation [JJCAI'11]						
 Can the induced game-hypothesis generalize to new game instances? 						
Accuracy was evaluated over previously unseen game moves						
	Target Concept	Initial Model	Learned Model			
	FREECELL	0.78	0.956	ĺ		
	HOMECELL	0.532	0.672			
	TABLEAU	0.536	0.628			
 Can the learned reader generalize to new inputs? Accuracy was evaluated over previously unseen game moves using classification rules generated from previously unseen instructions. 						
	Target Concept	Initial Model	Learned Model			
	FREECELL	0.78	0.967			
	HOMECELL	0.532	0.668			
	TABLEAU	0.536	0.608			
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Conclusion	Thank You!				
 Study a new type of machine learning, based on natural language interpretation and feedback 					
 The motivation is to reduce annotation cost and focus the learning process on human-level task expertise rather than on machine learning and technical expertise 					
 Technical approach is based on (1) Learning structure with indirect supervision (2) Constraining intermediate structure representation declaratively 					
 These were introduced via Constrained Conditional Models: Computational Framework for global inference and a vehicle for incorporating knowledge in structured tasks 					
 Integer Linear Programming Formulation – Work continues in the Game Playing do 	a lot of recent work (see tutorial) omain: learning to play legally				
and learning to play better					
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