Automated Crossword Solving

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Crossword Puzzles and Data

| Category	Clue	Answer
Knowledge (37%)	Birds on Minnesota state quarters	LOONS
	Architect Frank	GEHRY
Definition (33%)	First in a series	PILOT
	Tusked savanna dweller	WARTHOG
Commonsense (14%)	Like games decided by buzzer beaters	CLOSE
	Opposite of *luego*	AHORA
Wordplay (8%)	Frequent book setting	SHELF
	One followed by nothing?	TEN
Phrase (8%)	"Is it still a date?"	AREWEON
	"Post ___ analysis"	HOC
Cross-Reference (2%)	See Capital of 52-Down	GHANA
	Oft-wished-upon sighting	SHOOTINGMETEOR

System Overview
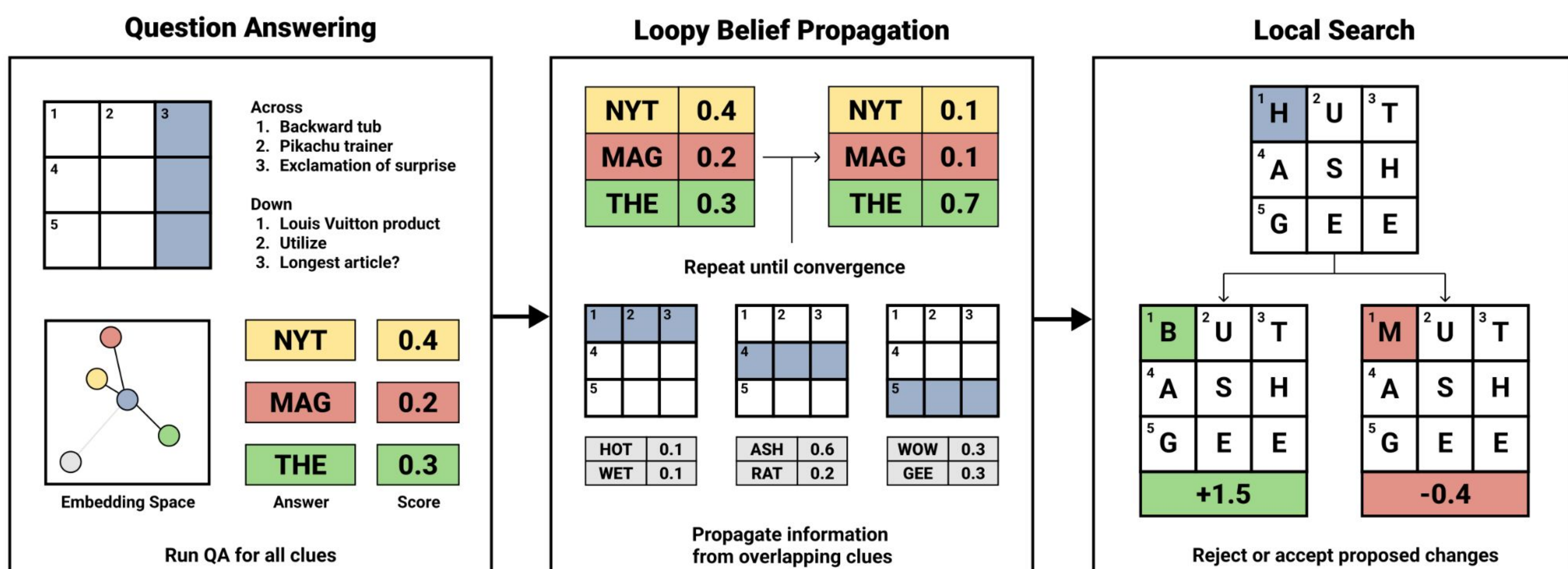
- <u>Question Answering</u>: Use a neural QA model to generate answer probabilities for each clue
- <u>Belief Propagation</u>: Refine answer probabilities by reasoning over crossing answers
- <u>Local Search</u>: Flip and rescore individual characters in the puzzle

Key Results

	Perfect Puzzle (%)		Letter Acc. (%)	
Source	Dr. Fill	BCS	Dr. Fill	BCS
The Atlantic	76.6	**89.1**	99.7	**99.8**
Newsday	88.5	**94.2**	**99.9**	99.8
The New Yorker	77.3	**78.3**	99.6	**99.8**
The LA Times	87.0	**92.6**	99.9	99.9
The New York Times	56.9	**81.7**	99.4	**99.7**
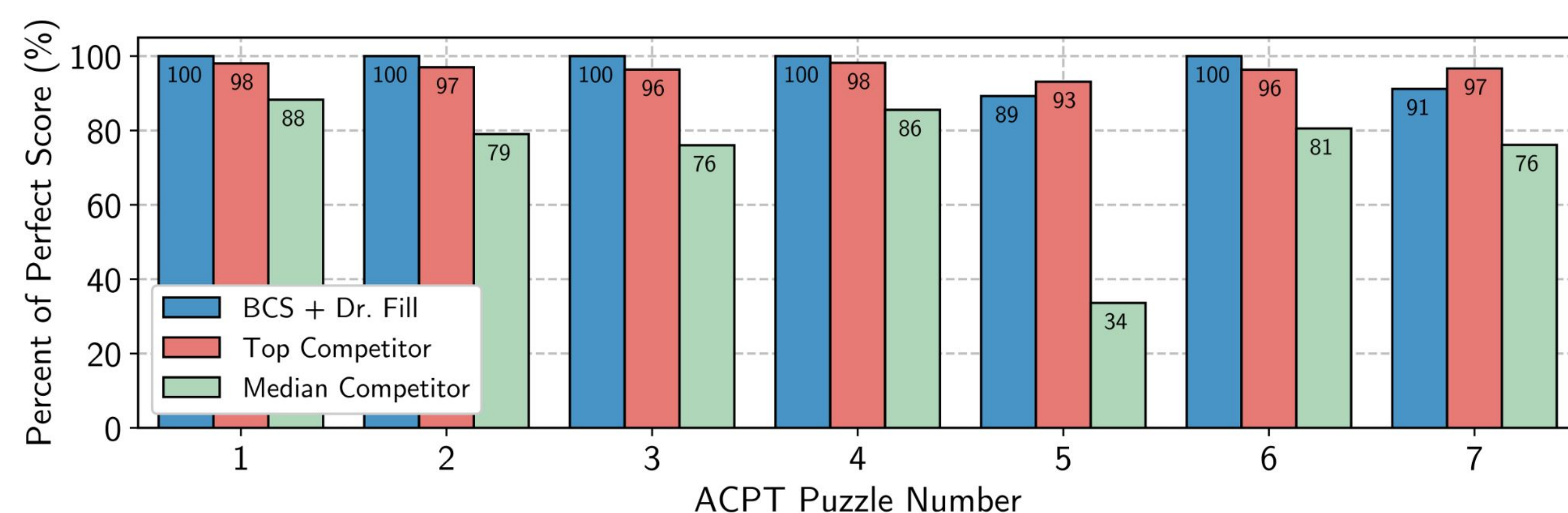
Achieve near perfection on crossword puzzles from major newspapers

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