

## Named Entity Recognition

Identify people, locations, and organizations within a body of text. Our Named Entity Recognition (NER) engine has surpassed the best-performing models in the industry by a wide margin.

The entities that this engine creates become the backbone of your knowledge graph and analytic workflows. The user has the option to turn on disambiguation for named entity variations.

This engine is also available on Social Data and is optimized for short informal content including emojis and spelling mistakes. Available languages include English, Chinese (Simplified), and Arabic. Upon request, Primer can deploy engines in additional languages.

### DOCUMENTATION

[VIEW IN API DOCS](#) 

EXAMPLE	OUTPUT				
Blackpink is coming to your area — in theaters!	<table border="1"> <tr> <td><b>organizations:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>YG Entertainment</td> <td>0.92</td> </tr> </table>	<b>organizations:</b>	<b>confidence:</b>	YG Entertainment	0.92
<b>organizations:</b>	<b>confidence:</b>				
YG Entertainment	0.92				
<p><b>YG Entertainment</b> dropped a trailer today (July 14) for <b>Blackpink</b>'s upcoming documentary film as part of the girl group's fifth debut anniversary, which they're calling "4+1 Project."</p>	<table border="1"> <tr> <td><b>organizations:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>Blackpink</td> <td>0.99</td> </tr> </table>	<b>organizations:</b>	<b>confidence:</b>	Blackpink	0.99
<b>organizations:</b>	<b>confidence:</b>				
Blackpink	0.99				
<p>The trailer shows footage from Blackpink's tours and rehearsals, along with members <b>Jisoo</b>, <b>Jennie</b>, <b>Rosé</b>, and <b>Lisa</b> looking back on their journey since debuting in 2016 and becoming one of the biggest girl groups in the world.</p> <p>....</p> <p><b>YG Entertainment</b> confirmed that Lisa is the next member set to make a solo debut, set to be released later this summer. The music video for her new song is being filmed this week, per <b>Soompi</b>.</p>	<table border="1"> <tr> <td><b>miscellaneous:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>4 + 1 Project</td> <td>0.72</td> </tr> </table>	<b>miscellaneous:</b>	<b>confidence:</b>	4 + 1 Project	0.72
<b>miscellaneous:</b>	<b>confidence:</b>				
4 + 1 Project	0.72				
	<table border="1"> <tr> <td><b>people:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>Jisoo</td> <td>0.99</td> </tr> </table>	<b>people:</b>	<b>confidence:</b>	Jisoo	0.99
<b>people:</b>	<b>confidence:</b>				
Jisoo	0.99				
	<table border="1"> <tr> <td><b>people:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>Jennie</td> <td>0.99</td> </tr> </table>	<b>people:</b>	<b>confidence:</b>	Jennie	0.99
<b>people:</b>	<b>confidence:</b>				
Jennie	0.99				
	<table border="1"> <tr> <td><b>people:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>Rosé</td> <td>0.99</td> </tr> </table>	<b>people:</b>	<b>confidence:</b>	Rosé	0.99
<b>people:</b>	<b>confidence:</b>				
Rosé	0.99				
	<table border="1"> <tr> <td><b>people:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>Lisa</td> <td>0.99</td> </tr> </table>	<b>people:</b>	<b>confidence:</b>	Lisa	0.99
<b>people:</b>	<b>confidence:</b>				
Lisa	0.99				
	<table border="1"> <tr> <td><b>people:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>Soompi</td> <td>0.62</td> </tr> </table>	<b>people:</b>	<b>confidence:</b>	Soompi	0.62
<b>people:</b>	<b>confidence:</b>				
Soompi	0.62				

### ADDITIONAL ENGINES

- NER, Social Data (Twitter)
- NER, Chinese (Simplified)
- NER, Arabic

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**PERFORMANCE METRICS**

**NER (RESOLVED)**

- Recall: Person 90%, Location 78%, Organization 74%, Miscellaneous 58%
- Precision: Person 90%, Location 82%, Organization 81%, Miscellaneous 61%
- F1: Person 90%, Location 80%, Organization 74%, Miscellaneous 59%

**NER, SOCIAL DATA (TWITTER)**

- Recall: Person 91%, Location 70%, Organization 80%, Miscellaneous 43%
- Precision: Person 94%, Location 85%, Organization 78%, Miscellaneous 64%
- F1: Person 92%, Location 77%, Organization 79%, Miscellaneous 51%

**NER, CHINESE (SIMPLIFIED)**

- Recall: Person 79%, Location 77%, Organization 67%
- Precision: Person 86%, Location 85%, Organization 82%
- F1: Person 82%, Location 81%, Organization 74%

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**TRAINED ON**

This engine was trained on a diverse set of news, sports, and open source data.

**EVALUATED AGAINST**

The engine is evaluated against industry benchmarks, commercial competitors, and leading academic models.

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To get hands on with Primer Engines, contact us at [engines@primer.ai](mailto:engines@primer.ai) to discuss your needs.

## Custom Entity Detection

Move beyond people, places, and organizations and identify other entities in the text. For example, you can locate entertainment mentions in an article, such as movies, genres, songs, directors, actors, and artists, detect and retrieve quotes in articles, and extract dates mentioned in publications.

EXAMPLE	OUTPUT				
<p><b>BTS</b> started 2021 off right with the second No. 1 hit of the year. After <b>Mariah Carey's "All I Want for Christmas Is You"</b> vacated the top spot, the South Korean group's <b>"Dynamite"</b> returned to the peak spot.</p>	<p><b>[BTS]</b></p> <table border="0"> <tr> <td><b>type:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>artist</td> <td>0.96</td> </tr> </table>	<b>type:</b>	<b>confidence:</b>	artist	0.96
<b>type:</b>	<b>confidence:</b>				
artist	0.96				
	<p><b>[MARIAH CAREY]</b></p> <table border="0"> <tr> <td><b>type:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>artist</td> <td>0.95</td> </tr> </table>	<b>type:</b>	<b>confidence:</b>	artist	0.95
<b>type:</b>	<b>confidence:</b>				
artist	0.95				
	<p><b>[ALL I WANT FOR CHRISTMAS IS YOU]</b></p> <table border="0"> <tr> <td><b>type:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>song</td> <td>0.95</td> </tr> </table>	<b>type:</b>	<b>confidence:</b>	song	0.95
<b>type:</b>	<b>confidence:</b>				
song	0.95				
	<p><b>[DYNAMITE]</b></p> <table border="0"> <tr> <td><b>type:</b></td> <td><b>confidence:</b></td> </tr> <tr> <td>song</td> <td>0.86</td> </tr> </table>	<b>type:</b>	<b>confidence:</b>	song	0.86
<b>type:</b>	<b>confidence:</b>				
song	0.86				

### PERFORMANCE METRICS

Performance is dependent on the difficulty of the task and the amount of available data to train the engines. Primer-trained Custom Entity Detection performs with an average F1 of 85% with both high recall and precision.

TRAINED ON	EVALUATED AGAINST
<p>This engine is trained on customer data, open source data sets, and propriety datasets.</p>	<p>This engine was evaluated against cross-validated datasets refined with Primer's proprietary labeling evaluation techniques.</p>

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## Named Entity Linking

Link extracted entities with your knowledge graph or Primer's knowledge base. With this engine, a user can differentiate between the actor Michael Jordan who starred in Space Jam vs Michael Jordan who was a part of the movie Black Panther.

### EXAMPLE

A guide to **Marvel Studios Black Widow** movie. Includes all-new interviews with the cast and talent behind the cameras! Experience the interviews with the stars and teams dedicated to bringing this brand new movie to life! Featuring interviews with the stars of the film: **Scarlett Johansson**, **Florence Pugh**, **David Harbour**, and **Rachel Weisz**, this behind the scenes book includes stunning photos and imagery from **Marvel Studios'** latest movie. This title also includes interviews with the crew responsible for bringing **Black Widow's** world of espionage to life along with an in-depth look at the comic history of the iconic **Marvel** character.

### OUTPUT

#### [MARVEL]

<b>name:</b>	<b>entity type:</b>
Marvel Studios	company

**Linked entity id:**

Q367466

#### [BLACK WIDOW]

<b>name:</b>	<b>entity type:</b>
Black Widow	movie

**Linked entity id:**

Q2373794

#### [SCARLETT JOHANSSON]

<b>name:</b>	<b>entity type:</b>
Scarlett Johansson	person

**Linked entity id:**

Q34436

#### [FLORENCE PUGH]

<b>name:</b>	<b>entity type:</b>
Florence Pugh	person

**Linked entity id:**

Q22277803

#### [DAVID HARBOUR]

<b>name:</b>	<b>entity type:</b>
David Harbour	person

**Linked entity id:**

### ADDITIONAL ENGINES

- NER, Social Data (Twitter)
- NER, Chinese (Simplified)
- NER, Arabic

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### PERFORMANCE METRICS

#### DATASET 1: NEWS DATA

- Recall: 97%
- Precision: 99%
- F1: 98%

#### DATASET 2: OPEN SOURCE DATA

- Recall: 92%
- Precision: 85%
- F1: 88%

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#### TRAINED ON

This engine is trained on Primer news sets and open source datasets.

#### EVALUATED AGAINST

The engine is evaluated against Primer news sets and open source datasets.

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## Relation Extraction

Identify relationships between entities, create profiles on people, and build your own knowledge graph.

Engines extract relationships from text between persons and their activity, e.g. creations, affiliation, employer, membership, occupation, ownership, or position held. For example, you can find the artist who created that song you like, the new podcast of your favorite influencer or the producer of the latest box office hit.

### DOCUMENTATION

[VIEW IN API DOCS](#) 

EXAMPLE	OUTPUT		
<p>On the July 17 episode of JTBC's "Ask Us Anything," <b>Baby V.O.X's Kan Mi Yeon</b> and <b>Yoon Eun Hye</b> and <b>Shinhwa's Jun Jin</b> and <b>Andy</b> appeared as guests.</p>	<b>subject:</b>	<b>object:</b>	<b>relation:</b>
	Kan Mi Yeon	Baby V.O.X.	employer of
	<b>confidence:</b>		
	0.86		
	<b>subject:</b>	<b>object:</b>	<b>relation:</b>
	Jun Jin	Shinhwa	member of
	<b>confidence:</b>		
	0.79		
	<b>subject:</b>	<b>object:</b>	<b>relation:</b>
	Yoon Eun Hye	Baby V.O.X.	member of
	<b>confidence:</b>		
	0.74		
	<b>subject:</b>	<b>object:</b>	<b>relation:</b>
	Andy	Shinhwa	member of
	<b>confidence:</b>		
	0.81		

### ADDITIONAL ENGINES

- Relation Extraction, Person-Activity
- Relation Extraction, Person-Affiliation
- Relation Extraction, Person-Employer
- Relation Extraction, Person-Membership
- Relation Extraction, Person-Occupation
- Relation Extraction, Person-Ownership
- Relation Extraction, Person-Position Held
- Relation Extraction, Person-Creator

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**PERFORMANCE METRICS**

- Recall: Person-Employer 87%, Organization-Organization 83%, Person-Location 52%
- Precision: Person-Employer 99%, Organization-Organization 94%, Person-Location 91%
- F1: Person-Employer 93%, Organization-Organization 88%, Person-Location 66%

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**TRAINED ON**

This engine was trained on SQuAD 2 and proprietary data.

**EVALUATED AGAINST**

The engine is evaluated against news data, including celebrity gossip, local news, sports summaries, and crime stories.

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