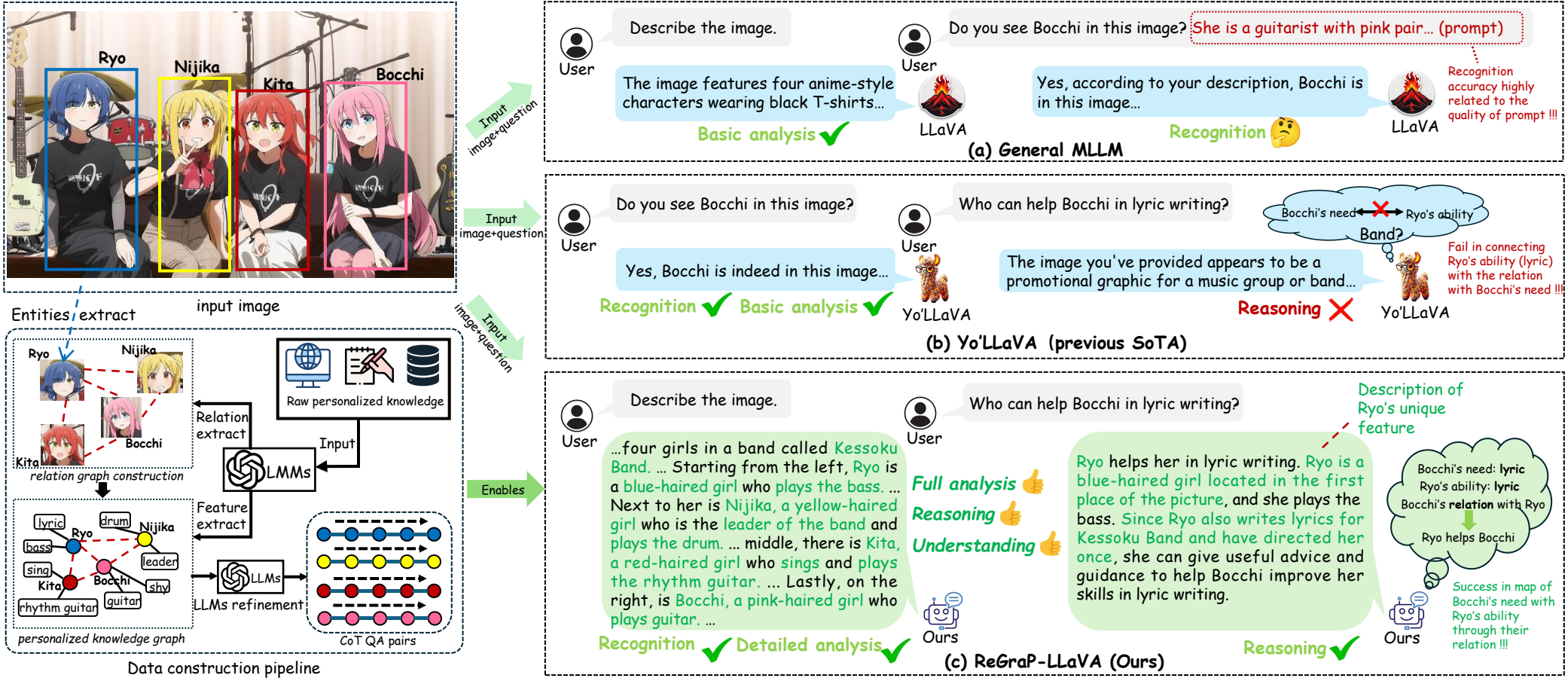
Ryo
Nijika
Kita
Bocchi
input image
Entities extract
Input image+question
Input image+question
Input image+question
Enables
Raw personalized knowledge
Relation extract
Input
LMMs
Feature extract
LLMs
LLMs refinement
CoT QA pairs
relation graph construction
personalized knowledge graph
lyric
drum
bass
sing
leader
shy
guitar
rhythm guitar
Data construction pipeline
User
Describe the image.
The image features four anime-style characters wearing black T-shirts...
Basic analysis
LLaVA
Do you see Bocchi in this image?
She is a guitarist with pink pair... (prompt)
Yes, according to your description, Bocchi is in this image...
Recognition
Recognition accuracy highly related to the quality of prompt !!!
(a) General MLLM
Do you see Bocchi in this image?
Yes, Bocchi is indeed in this image...
Recognition
Basic analysis
Yo'LLaVA
Who can help Bocchi in lyric writing?
Bocchi's need
Ryo's ability
Band?
The image you've provided appears to be a promotional graphic for a music group or band...
Reasoning
Fail in connecting Ryo's ability (lyric) with the relation with Bocchi's need !!!
(b) Yo'LLaVA (previous SoTA)
Describe the image.
...four girls in a band called Kessoku Band. ... Starting from the left, Ryo is a blue-haired girl who plays the bass. ... Next to her is Nijika, a yellow-haired girl who is the leader of the band and plays the drum. ... middle, there is Kita, a red-haired girl who sings and plays the rhythm guitar. ... Lastly, on the right, is Bocchi, a pink-haired girl who plays guitar. ...
Full analysis
Reasoning
Understanding
Recognition
Detailed analysis
Ours
Who can help Bocchi in lyric writing?
Description of Ryo's unique feature
Ryo helps her in lyric writing. Ryo is a blue-haired girl located in the first place of the picture, and she plays the bass. Since Ryo also writes lyrics for Kessoku Band and have directed her once, she can give useful advice and guidance to help Bocchi improve her skills in lyric writing.
Bocchi's need: lyric
Ryo's ability: lyric
Bocchi's relation with Ryo
Ryo helps Bocchi
Reasoning
Success in map of Bocchi's need with Ryo's ability through their relation !!!
(c) ReGraP-LLaVA (Ours)