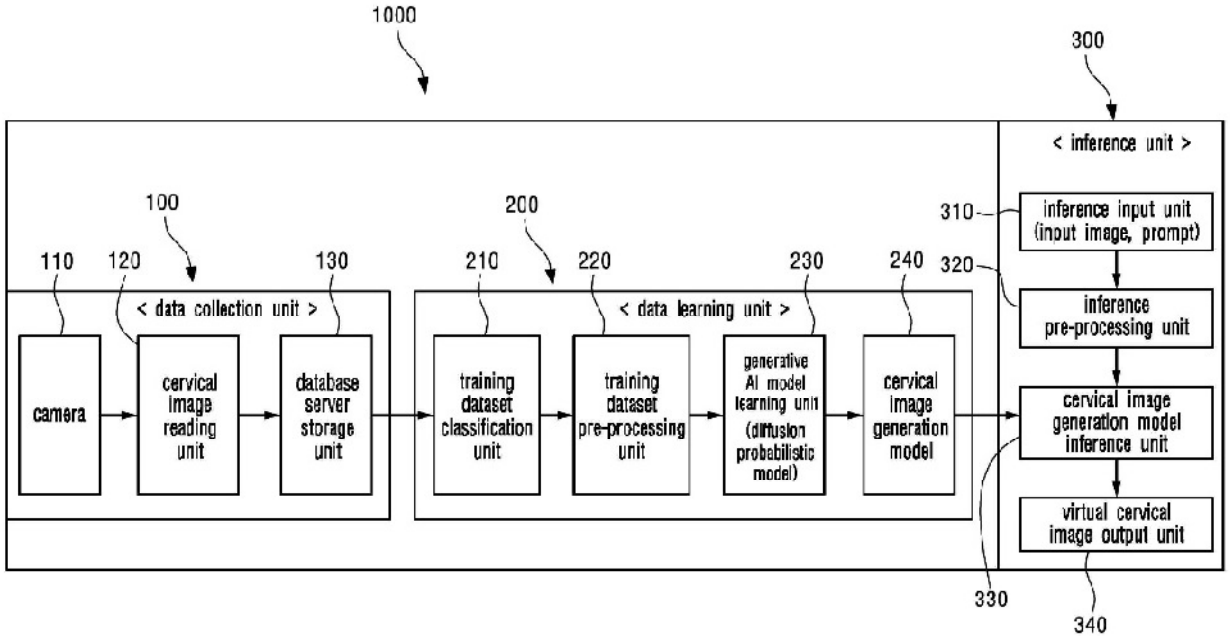
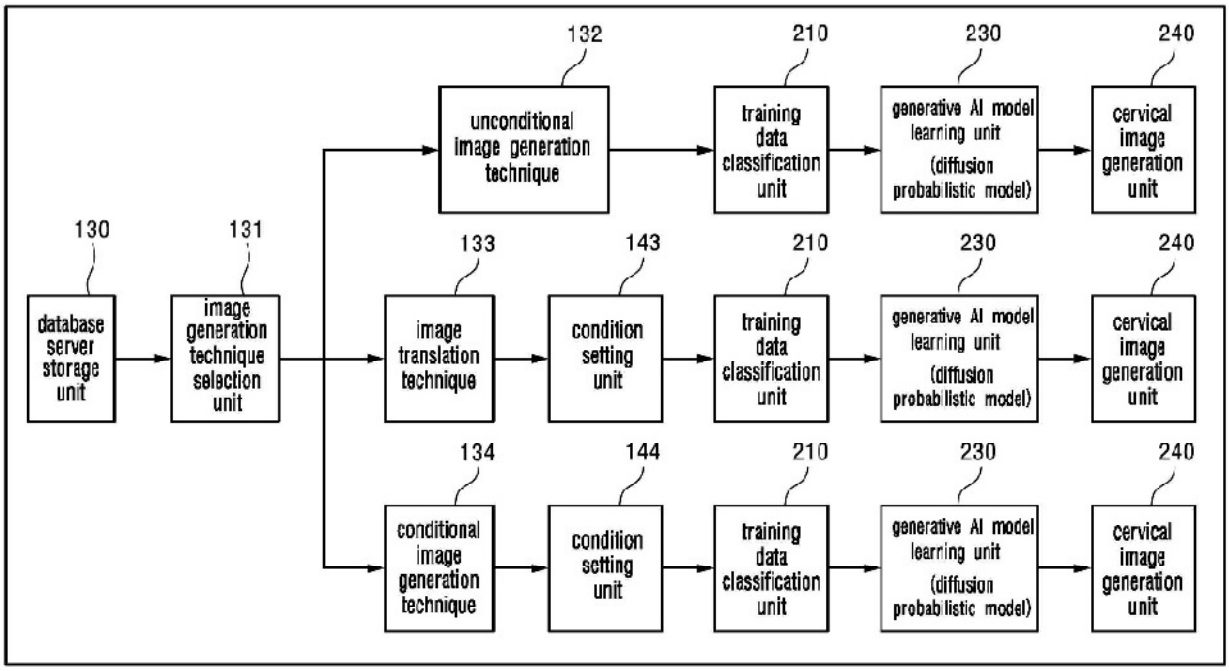
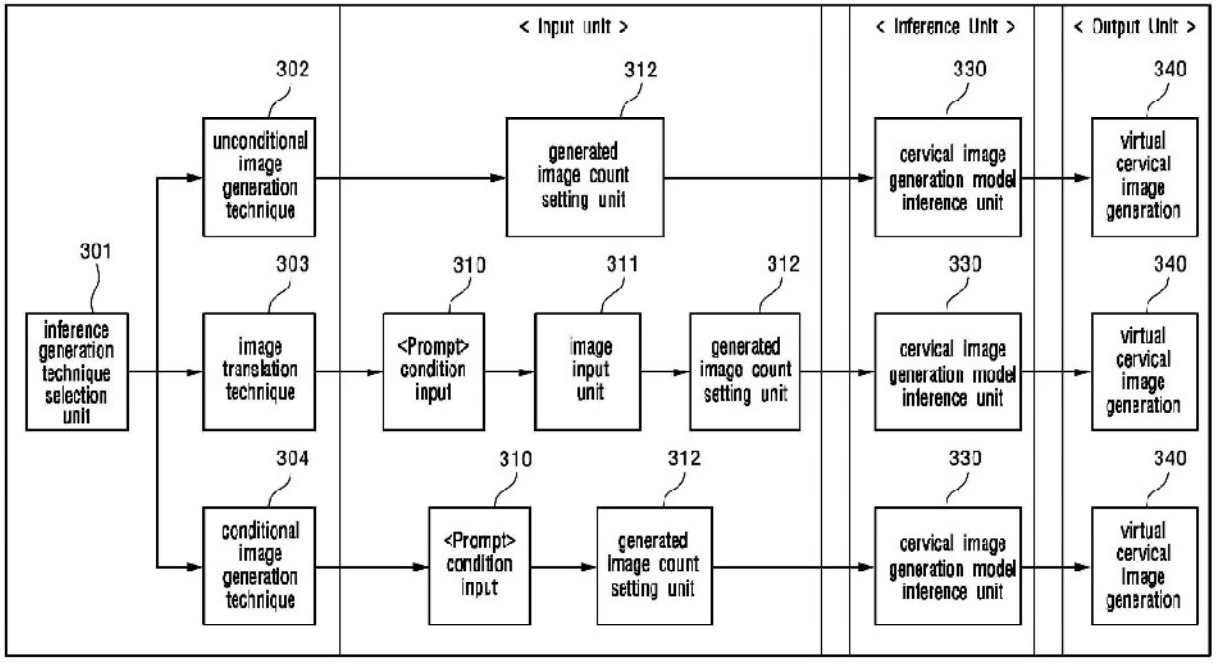
[FIG. 1]


1000
300
< inference unit >
100
200
310
110
120
130
210
220
230
240
320
< data collection unit >
< data learning unit >
inference input unit (input image, prompt)
camera
cervical image reading unit
database server storage unit
training dataset classification unit
training dataset pre-processing unit
generative AI model learning unit (diffusion probabilistic model)
cervical image generation model
inference pre-processing unit
cervical image generation model inference unit
virtual cervical image output unit
330
340

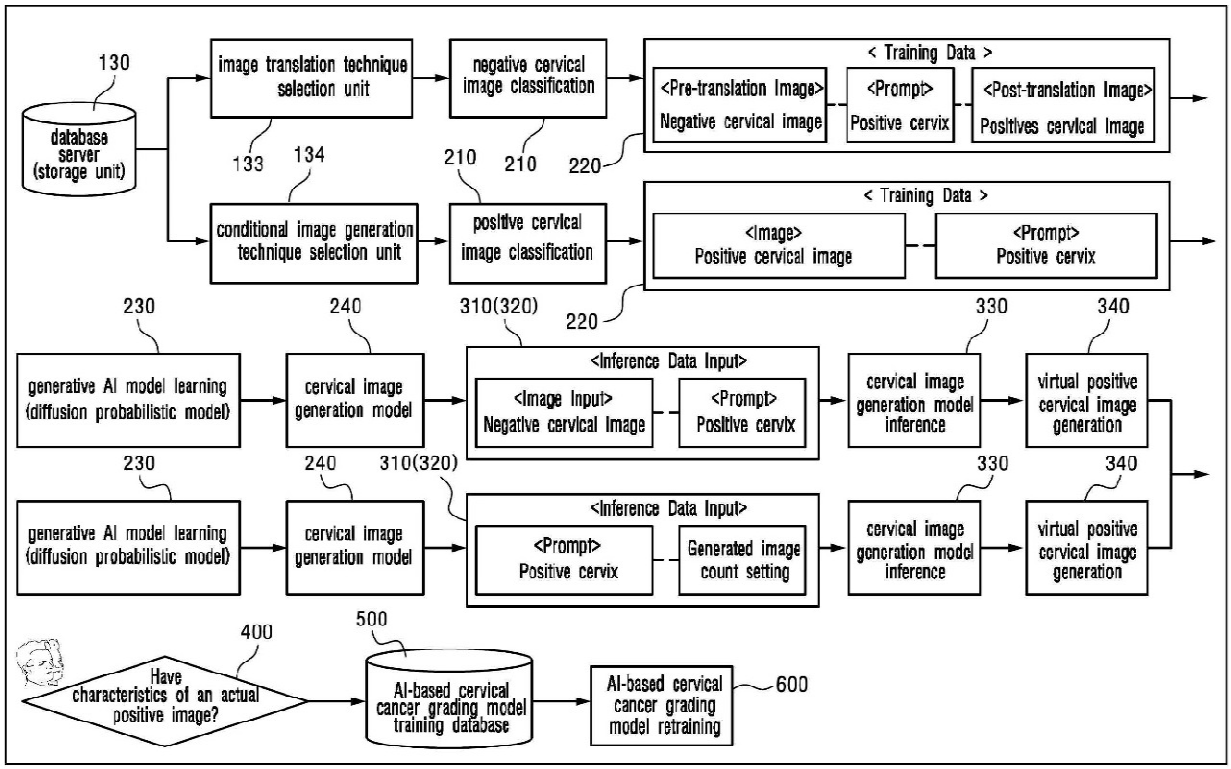
[FIG. 2]


132
210
230
240
unconditional image generation technique
training data classification unit
generative AI model learning unit (diffusion probabilistic model)
cervical image generation unit
130
131
133
143
database server storage unit
image generation technique selection unit
image translation technique
condition setting unit
134
144
conditional image generation technique

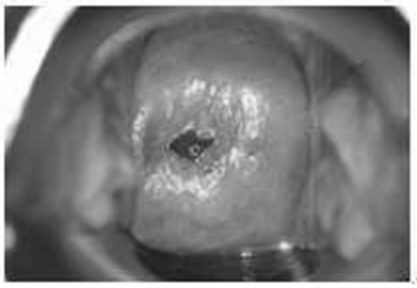
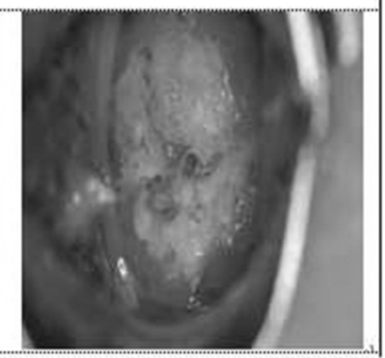
[FIG. 3]


< Input unit >
< Inference Unit >
< Output Unit >
301
inference generation technique selection unit
302
unconditional image generation technique
303
image translation technique
304
conditional image generation technique
310
<Prompt> condition input
311
image input unit
312
generated image count setting unit
310
<Prompt> condition input
312
generated image count setting unit
330
cervical image generation model inference unit
330
cervical image generation model inference unit
330
cervical image generation model inference unit
340
virtual cervical image generation
340
virtual cervical image generation
340
virtual cervical image generation

[FIG. 4]


130
database server (storage unit)
image translation technique selection unit
133
134
conditional image generation technique selection unit
negative cervical image classification
210
positive cervical image classification
210
220
< Training Data >
<Pre-translation Image>
Negative cervical image
<Prompt>
Positive cervix
<Post-translation Image>
Positives cervical image
< Training Data >
<Image>
Positive cervical image
<Prompt>
Positive cervix
220
230
generative AI model learning (diffusion probabilistic model)
240
cervical image generation model
310(320)
<Inference Data Input>
<Image Input>
Negative cervical image
<Prompt>
Positive cervix
330
cervical image generation model inference
340
virtual positive cervical image generation
230
generative AI model learning (diffusion probabilistic model)
240
cervical image generation model
310(320)
<Inference Data Input>
<Prompt>
Positive cervix
Generated image count setting
330
cervical image generation model inference
340
virtual positive cervical image generation
400
Have characteristics of an actual positive image?
500
AI-based cervical cancer grading model training database
AI-based cervical cancer grading model retraining
600

[FIG. 5a]

Image Translation Technique	- Input image: Negative image (jpg) - Prompt: "Positive cervix" - Number of images to be generated: 1	Output: Virtual positive image (jpg)
		

[FIG. 5b]

Conditional Image Generation Technique	- Prompt: "Positive cervix" - Number of images to be generated: 3	Output: Virtual positive images (jpg) 