

CS 2310 Assignment 4: Multimedia Functional Dependency

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Multimedia database definition:

Gesture = {GesturePhoto, GestureID}

Document = {GestureID, MultimediaDocument}


Functional dependency function definition:


mfd1: GesturePhoto_{g1(t1)} -> GestureID_{g2(t2)}


mfd2: GestureID_{g2(t2)} -> MultimediaDocument_{g3(t3)}

Where g1 is a classification function to classify users' gestures, g2 is the similarity functions for comparing GestureID and g3 is the similarity functions for comparing MultimediaDocuments.

The patterns can be represented using IC cards:

IC Card	IC Name: Input Gesture
Description: User input gestures	
Interaction Pattern:	
	
By Myself with Interaction	
My Task: Perform gesture	
Time Critical Condition: None	
Name of Other IC: Gesture Recognition IC	
Message to Other IC: The gesture	
Other IC's Task: Recognize my gesture	
Card 1 of 1 (If necessary please use several IC cards to describe an IC)	

IC Card	IC Name: Classify Gesture
Description: Classify user gesture	
Interaction Pattern:	
	
By Myself with Interaction	
My Task: Classify user gesture	
Time Critical Condition: None	
Name of Other IC: Document Retrieval IC	
Message to Other IC: GestureID	
Other IC's Task: Retrieve the matched document using GestureID	
Card 1 of 1 (If necessary please use several IC cards to describe an IC)	

IC Card	IC Name: Document Retrieval
Description: Retrieve the matched document using GestureID	
Interaction Pattern:	
	
By Myself no Interaction	
My Task: Retrieve the matched document using GestureID	
Time Critical Condition: None	
Name of Other IC: None	
Message to Other IC: None	
Other IC's Task: None	
Card 1 of 1 (If necessary please use several IC cards to describe an IC)	

Patterns recognized:

Problem: Classify user gestures from sensors.

Context: The classified user gesture is used to identify the document that the user wants to search.

Solution: Use classification function g_1 to find the similar gesture within the difference of t_1 .

Problem: Search the document using the GestureID.

Context: Multimedia data cannot be exactly the same.

Solution: Use similarity function g_2 and g_3 to find the similar document of the GestureID within the difference of t_3 .