



I-SEARCH

**Information & Communication
Technologies**



I-SEARCH Conceptual Description



I-SEARCH Project

A unified framework for multimodal
content SEARCH





I-SEARCH

Overview

These slides present a possible search interface for I-SEARCH, which should support the understanding of how I-SEARCH will work.



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Main search flow

The end user performs a search and retrieval process in 4 steps:

- Create the query
- Get the result screen
- Refine the result set
- Get information about the retrieved result items



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Query generation

General input types

With the input field on the right screenshot, you are able to compose search queries by:

- Typing free **text**
- Drawing **sketches**
- Adding:
 - **3D** file formats
 - **Image** file formats
 - **Video** file formats
 - **Audio** file formats
- Recording **sound** files
- Adding **real world information** (manually added text data or automatically retrieved from sensors)
- Adding **emotional cues** (encoded through emoticons)

A screenshot of a web browser window showing the I-SEARCH interface. The browser's address bar displays 'http://www.i-search.eu/interface'. The page features the I-SEARCH logo and the text 'A unified framework for multimodal content SEARCH'. Below this is a large, light-colored input area with a grey header that says '>> more input options'. Inside the input area, the text 'Sketch, type or drop here anything you're looking for...' is displayed. At the bottom of the interface, there are two buttons: 'Find' with a magnifying glass icon and 'Reset' with a red 'X' icon.



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None file formats like live-sounds, real-world data from sensors and emotional data are added from extra menu buttons.

An example of a menu with those buttons is shown here along with an already added 3D model from the computer of the end user.

Any file-based multimedia can be added by drag and drop or through a file selection dialog.

Query generation

Input type handling

The screenshot shows a web browser window with the URL <http://www.i-search.eu/interface>. The page header includes the I-SEARCH logo and the text "A unified framework for multimodal content SEARCH". Below this is a menu with three buttons: "Record sound" (with a speaker icon), "Add emotional cues" (with a smiley face icon), and "Add real-world data" (with a globe icon). A "<< less input options" link is positioned below the menu. The main content area displays a 3D model of a blue pickup truck. At the bottom of the interface are two buttons: "Find" (with a magnifying glass icon) and "Reset" (with a red 'X' icon).



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Multimodal queries can be composed by adding more than one input type to the query.

In the example here a self recorded car sound was added to the already uploaded 3D model in order to retrieve more specific multimedia of cars which are related to the added sound as well as to the added shape from the 3D model.

Deleting works by just dragging the query items out of the input box.

Query generation

Multimodal queries

The screenshot shows a web browser window with the URL <http://www.i-search.eu/interface>. The page features the I-SEARCH logo and the tagline "A unified framework for multimodal content SEARCH". Below this, there is a section titled ">> more input options" containing two input boxes. The left box displays a 3D model of a blue pickup truck. The right box displays an audio waveform with a duration of 0:00 / 0:00. At the bottom of the interface, there are two buttons: "Find" (with a magnifying glass icon) and "Reset" (with a red X icon).



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Here is an example of a possible multimodal result set.

The result is visualized in groups based on their modality and here it is organized in tabs (see left side).

The upper input field displays the current search query and is also used to refine the search query.

Result representation is based on user needs and the content in the result set, so that the visualization of the result will vary.

Result screen

Tabbed example

The screenshot shows a web browser window with the URL <http://www.i-search.eu/interface>. The interface features a search bar at the top containing a truck image and a magnifying glass icon. Below the search bar, the results are organized into tabs for different modalities:

Modality	Found
3D Content	14
2D Content	23
Video	10
Audio	5
Text	23

The 3D Content tab is currently selected, displaying a grid of 9 truck images. Each image includes a green plus sign and a grey X icon for interaction. The images shown are:

- Blue pickup truck (top left)
- Dark grey pickup truck with green roof (top middle)
- White pickup truck (top right)
- Dark green pickup truck (middle left)
- Black pickup truck (middle middle)
- Yellow pickup truck (middle right)
- Light blue pickup truck (bottom left)
- White pickup truck (bottom middle)
- White pickup truck (bottom right)



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Result screen

Bubble example

Here is another example of a possible multimodal result screen.

The modality groups remain, but are now arranged in groups of bubbles which represent the relevance of the containing result item to the query.

The current query is displayed in the middle and is also used as refinement area.

The screenshot shows the I-SEARCH web interface with the following elements:

- Header:** I-SEARCH logo and the text "A unified framework for multimodal SEARCH".
- Search Bar:** The current query "Ford Truck Oldtimer Car Pickup" is displayed in the center.
- Modality Groups (Bubbles):**
 - Image (22):** A bubble containing a photograph of a dark green Ford pickup truck.
 - Video (9):** A bubble containing a video thumbnail of a light blue Ford pickup truck.
 - Text (18):** A bubble containing the text "Ford Truck Oldtimer Car Pickup".
 - Audio (7):** A bubble containing a green audio waveform.
 - 3D (14):** A bubble containing a 3D model of a blue Ford pickup truck.
- Refinement Area:** A central bubble containing a small image of the blue 3D truck model, which is highlighted with an orange border.
- Total found: 70**



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Result sets can be refined, for example if too many result items occur.

Therefore a desirable result item can be dragged to the query input field in order to generate a new query which produces a more specific result set.

Result refinement

The screenshot shows the I-SEARCH interface with a search for '3D Content' resulting in 5 items. The interface includes a search bar, a magnifying glass icon, and a list of results. A red arrow points to a white pickup truck in the top row, and another red arrow points to a yellow pickup truck in the bottom row.

3D Content
Found: 5

2D Content
Found: 9

Video
Found: 1

Audio
Found: 2

Text
Found: 4

Select desirable result items

Get the most relevant results set



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By selecting a result item, an information screen about the result object occurs with a reference to the source of the selected content.

Item information

The screenshot shows a web browser window with the URL <http://www.i-search.eu/interface>. The interface includes a search bar with a magnifying glass icon and a grid of search results. A detailed view of a yellow Suzuki Tundra 3D model is displayed, showing its model name, format, size, texture status, license, and a download link to www.free3D.org.

Content Type	Found
3D Content	5
2D Content	9
Video	1
Audio	2
Text	4

Model: Suzuki Tundra
Format: 3ds (Studio Max)
Size: 1890 kB
Textured: yes
License: [GPL](#)
www.free3D.org



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User scenarios

Searching for content in the target business domains:

- Search for music content
 - A “music-lover” is looking for music material, which shares common affective features
 - A group of users perform search and retrieval of music, in a collaborative fashion
- Search for a piece of furniture
 - Searching and retrieving 3D Furniture Models
- Search for 3D games models
 - 3D game component retrieval by a professional user
 - Game avatar retrieval by a gamer