

MWS: Multimodal Web Scrapping

The screenshot shows a Google Scholar profile for Randall Davis, Professor at MIT. The profile includes a list of publications, a 'Cited by' section, and a 'Public access' section. The MWS interface is overlaid on the page with several annotations: 1) A yellow box highlights the first publication, 'Negotiation as a metaphor for distributed problem solving'. 2) A red circle highlights the user's gaze on the word 'knowledge' in the title 'What is a knowledge representation?'. 3) A webcam feed in the top right corner shows the user's face with a green bounding box around the eyes. 4) A purple feedback dialog box in the bottom right corner displays the text: 'MWS Look at the data you want to scrape to highlight it. When it is highlighted, say "stop" to stop the gaze recognition and "continue" if the wrong data has been highlighted. If the desired data is highlighted, say "keep" or "remove" with column names (A-Z) to filter columns. For example, "keep A B". To reset columns, say "reset columns". To download the highlighted data, say "download data".' 5) A yellow box highlights the number '5' in the 'Based on' section of the 'Public access' area.

TITLE	CITED BY	YEAR
[A] Negotiation as a metaphor for distributed problem solving [B] R. Davis, R.G. Smith Artificial Intelligence 20 (1), 63-109	[D] 2076	[E] 1983
[A] Diagnostic reasoning based on structure and behavior [B] R. Davis Artificial Intelligence 24 (1-3), 347-410	[D] 1575	[E] 1984
[A] What is a knowledge representation? [B] R. Davis, H. Shrobe, P. Szolovits AI magazine 14 (1), 17-17	[D] 1432	[E] 1993
[A] Frameworks for cooperation in distributed problem solving [B] R.G. Smith, R. Davis IEEE Transactions on systems, man, and cybernetics 11 (1), 61-70	[D] 1075	[E] 1981
[A] Manifesto concerning the Legal Protection of Computer Programs, A [B] P. Samuelson, R. Davis, M.D. Kapor, J.H. Reichman COLUM. L. rev. 94, 2308	[D] 928	[E] 1994
[A] Knowledge-based systems in artificial intelligence [B] R. Davis, D.B. Lenat McGraw-Hill	[D] 920	[E] 1982

Overview of how MWS can be used to scrape data from a website: 1) Highlighted website data corresponding to the scraped data table, 2) red circle which represents the user's detected gaze, 3) webcam feed showing how user's gaze is being detected, 4) MWS feedback dialog (also uttered via speech synthesis) used to respond to user commands and guide user actions, 5) user feedback dialog used to display what voice command was detected by the system

MWS is a Chrome browser extension that enables web scraping via gaze detection and voice commands in a few simple steps. Once initiated on a website, MWS detects the point on the website where the user is looking, through their webcam feed, and continuously determines and highlights the data table that that point belongs to. When the desired data table is highlighted, a user can use voice commands to stop the gaze detection and save the highlighted data table, filter which of the data table's columns to keep or remove and download the data table as a JSON file.

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Paper: <https://github.com/Kapaya/multimodal-web-scraping/blob/main/paper.pdf>

Demo: <https://youtu.be/Ee34bGjcYgU>