

Web browser

CT MRI¹

:

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:

JavaScript applet

(template)

HRCT MR
가 HTML

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GIF/JPEG

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JavaScript applet

CT MR

가

JavaScript applet

off-browser

off-browser

가

가

가

CT MR

(8). WWW

(9).

가

WWW

(7).

HTML(hypertext markup language) Java-
Script (Sun Microsystems, Mountain View, CA, U.S.A.)

(interactive education) 가

(simulation)

and interactive)

가

(dynamic

. World wide web(WWW)

(10-12).

¹

1999 11 30

2000 3 16

: Web browser

(interactive education program)

4.5 (Netscape Communications, Mountain View, CA, U.S.A.)
Internet Explorer 5.0 (Microsoft, Redmond, WA, U.S.A.)

HTML

(frame)

(,)
, CT MR

CT MR
CT/T 9800 Hi Light HiSpeed CT/i (GE Medical System,
Milwaukee, WI, U.S.A.)
1.5mm bone edge
algorithm MR GE 1.5T (Signa Avantage, GE Medical System, Milwaukee, WI, U.S.A.)
(temporomandibular joint holder)
(phased array coil)
(cochlear turn)
4000/90/6 (TR/TE/NE), 512×512 matrix, 20×10 cm field of view (FOV), 3 mm , 1.5 mm

HTML (editor) 3.0 (, ,
) JavaScript interactive form
applet 가
JavaScript
가 가
가

(horizontal semicircular canal)
3 dimensional Fourier transformation (3DFT)
gradient-echo MR 33/7/1 (TR/TE/NE), FA 15 ,
0.7mm, FOV 18 cm, 512×256 matrix

(http://echung.
pe.kr/temporal/)
가 (scroller.js, scrolltest.html, http://
webreference.com/js/) 가

(Image mapping)

IBM PC

98 (Microsoft, Redmond,
Washington, U.S.A.) (laser)
film scanner (Scanjet 600 , Hewlett-Packard,
U.S.A.) 1 MB 700 kb

400-500 KB가 (crop)
Adobe Phothoshop 5.0 (Adobe
Systems, Mountain View, CA, U.S.A.)
(brightness/contrast)

8 bit , (,
) 가 Com-puserve Gaphics Interchange Format
(GIF) Joint Photographic Expert Group (JPEG)

Phothoshop 5.0 4
가 가 500
, 450 가
GIF/JPEG format

(Zip drive , Iomega Co, UT, U.S.A.)
. HTML file text
40-50 KB 10kb (thumb-
nail) 가 HTML가
(loading time) (thumbnail)
(pop-up)

(Fig. 1).

(web bulletin board)

(Fig. 2). 25 MB
25 75
(25%)
(Slidemenu.class, http://www.cutepage.com)



Fig. 1. Index page of the interactive atlas of temporal bone. Text menu scrolls from below . When mouse clicks the center icon, the window moves to introduction page.

Netscape

(75%)

(template)

(Table 1).

CT MR chapter thumb-
nail

가

(PopUpMenuV32.class, Area.class, <http://dZiner.com>)
(Fig. 3).

(click and pop_up.script, <http://www.his.com/~smithers/freq/>)
(Fig. 4).

(search in-
dex)가 55 45
(form)

pop-up
(pull-down menu)

(Fig. 5).

JavaScript applet
(local area network: LAN)
(off-browser)

JavaScript applet

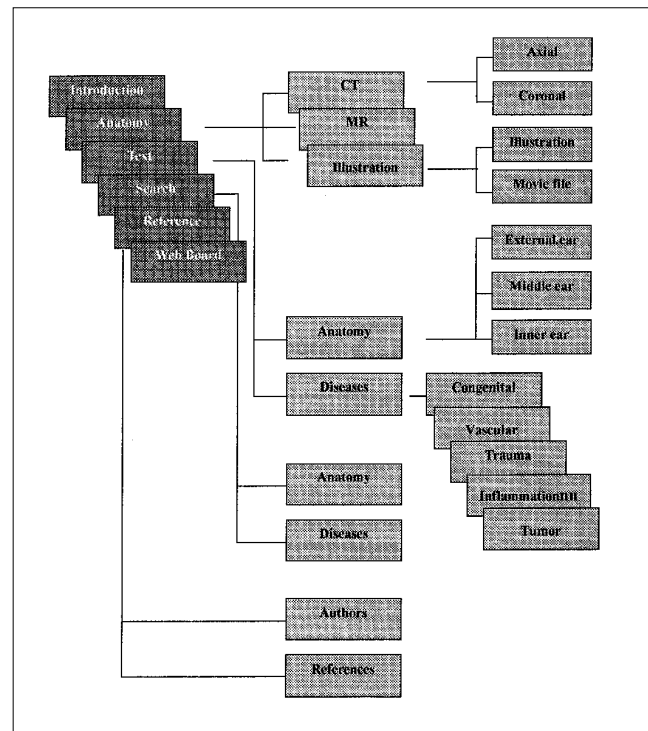


Fig. 2. Site map of the interactive atlas of temporal bone. Six main items have 2 or 4 subitems.

Table 1. The List and Download Sites of JavaScripts and Applets used in the Interactive Atlas of the Temporal Bone

JavaScripts or Applets	Contents	Download Site
DocJslib4.js scroller.js scrollerconfig.js scrolltext.html	Scrolling HTML in the restricted window to post message	http://webreference.com/js/
slidmenu.class	Sliding tree menu	http://www.cutepage.com
AnFade.class AnFade.jar	Fading images	http://www.anfyjava.com
Fade.class Thoughts.class	Fading texts	http://www.easyjava.co.kr/
AnLens.class Anfy.class	Lens-like image distortion along the track of the mouse	http://www.anfyjava.com
Marquee.class MarqueeInfo.class	Horizontal scrolling textsl	http://www.javascript.co.kr/
Mouseover_image.script	Color change on mouse-over	http://www.javascript.co.kr/
Diana.class Item.class AlphaColorFilter.class diana.ini	Sliding menu, very fast	http://www.icom.de
PopUpMenuV32.class Area.class	Click one spot, popup texts	http://dZiners.com
Click and pop_up.script	Click an item, popup new window	http://www.his.com/~smithers/freq/

: Web browser



Fig. 3. An example of the illustration of the anatomy of the temporal bone. When mouse clicks the structure in the CT image, appropriate text pops up in the new window.

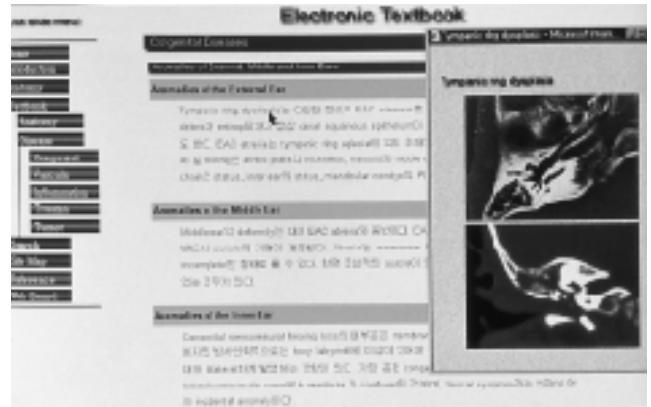


Fig. 4. An example of electronic text about the normal anatomy of the middle ear. When mouse clicks the item in the text, appropriate CT or MR image pops up in the new window.



Fig. 5. Pull-down form of search index of the normal anatomy of the temporal bone. When the mouse clicks the down arrow, pull-down menu shows structural names to find.

[illegible]

CD-ROM (journal) CT, MR, (13-16). 가 가 가 가 WWW multimedia HTML 가 HTML C++ (Inprise Corporation, Scotts Valley, CA, U.S.A.) Visual BASIC (Microsoft, Redmond, WA, U.S.A.) 가 Java (17-18). Java class applet CGI (common gate interface) server (server based program) . Java CD-ROM CD-ROM 가 HTML (animation) 가 (interactive) Java가 CD , CD-I (CD-Interactive), Java 가 가 JavaScript HTML 가 Netscape Netscape Commu-nications, Mountain View, CA, U.S.A.) 가 HTML JavaScript 가 (integration, interac-tive analysis, self-tuition and examination)가 가 (13-14). Java C++ server applet script (embedded) (Netscape 3.0, Internet explorer 3.0) . WWW Java

가 (shared) (free) JavaScript ap-plet applet CT MR 가 applet (PopUpMenuV32.class, Area.class, http://dZiner.com, Fig. 2). script (clickandpop_up.script, http://www.his.com/~smithers/freq/, Fig. 3) , www (9). 50 KB가 cache WWW CD-ROM , JavaScript applet 가 가 가

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Interactive Atlas Using Web Browser: CT and MRI of the Temporal Bone¹

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Purpose: The purposes of this study were to construct an interactive atlas of the temporal bone using a web-browser and to provide a template for web-based teaching files, using free and shared applets and scripts on the internet.

Materials and Methods: HRCT and MR images of the temporal bone including its normal anatomy, tumors, trauma, inflammation, anomalies and vascular diseases were used in this study. Acquired radiologic images were transformed to GIF/JPG formats and to achieve appropriate image quality, were retouched. Text and image files of normal anatomy and diseases were written by HTML. JavaScript and applets were inserted in the HTML files for the interactive display of images and texts. In order to review anatomic features and diseases, a search index was also attached to the last part of the file.

Results: Using interactive images and texts, temporal bone anatomy and disorders were displayed. Scripts and applets were also useful for indicating specific points of interest when a mouse was placed over the anatomic sites. The atlas may be viewed in the form of a CD-ROM, or via the internet using any computer platform or web-browser.

Conclusion: This web-based teaching file of the temporal bone offers dynamic and interactive education. It can be usefully employed as a template for the production of interactive educational materials, offering JavaScript and Providing suitable input for classes. It can replace texts and imaging contents.

Index words : Computers, educational aid,
Internet,
Temporal bone

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