

ActiveX

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Evaluation of Web-Based Real-Time Telemedicine Application Using ActiveX Controls for Medical Moving Picture Analysis

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Abstract

Telemedicine is described as combination of topics from the fields of telecommunication, medicine, and information and literally telemedicine means medicine at a distance. In this study, we present a web based real-time telemedicine application(WEBRETA) that was designed for patients who needs diagnosis on the Internet. The WEBRETA system is supporting transmitting of MPEG-4 video format(640*480)that was appropriate for Internet and designed with ActiveX controls technology that is also suitable for telecommunication link such as ADSL, VDSL and Cable modem which are very popular communication link in Korea. To improve the reliability and the usefulness of this prototype we involved the PSNR method and subjective score measuring from doctors. Futhermore, we will evaluate the WEBRETA with various communication network environment to improve how this system can contribute the diagnosis of patients and to analysis. (*Journal of Korean Society of Medical Informatics 9-3,261~267, 2003*)

Keyword : Telemedicine, ActiveX Controls, Web Based

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ActiveX

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I.

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II.

2 6).

1.

(WEBRETA)

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Windows 2000

Microsoft

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DirectX 8.1

Visual C++ 6.0

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PC

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ADSL, VDSL

(WEBRETA: Web based Real-time Telemedicine Application) 가

ActiveX Controls

WEBRETA

1

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ActiveX Control
MPEG-4

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8

PSNR

Paired t-Test

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Fig 1. WEBRETA

ActiveX - Microsoft
COM(Component Object Model)
ActiveX

가 DirectShow MPEG-4
Software Decompress
가 DLL(Dynamic
Link Library)
(Embedded) G.711

(320 x 240) 가 USB Interface
H.261
가 2 WEBRETA
640 x 480 가

() IP
2. 가

WEBRETA가
가 WEBRETA 가

MPEG-4
DirectShow
Software MPEG-4
MPEG-4

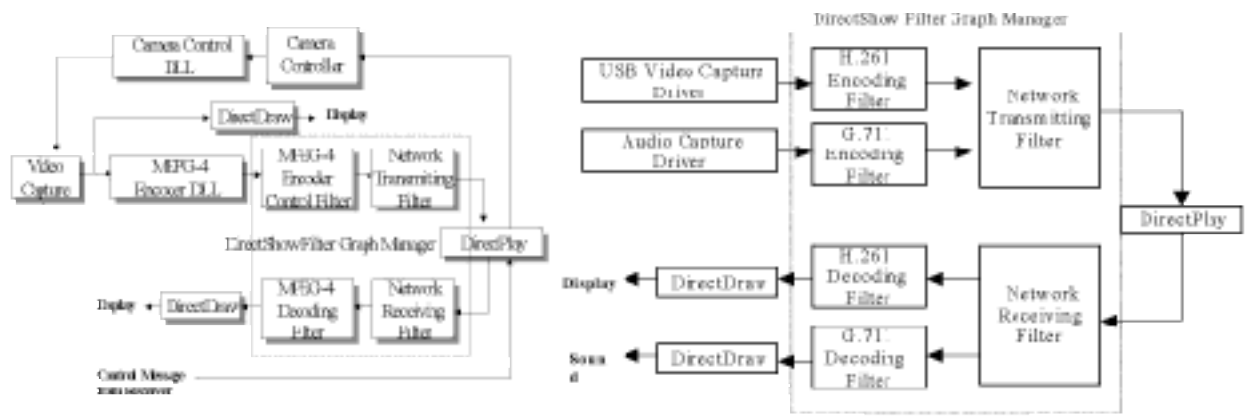


Fig2. WEBRETA

3 ,
 2 , 1
 가 가 VDSL, ADSL, Cable
 5 30Frame Modem
 frame rate 0.2, 0.4, 0.6, 0.8, 1.0, 2.0,
 4.0, 6.0, 8.0, 10Mbps III.
 가 가
 PSNR 1. 가
 PSNR
 가 8 1 PSNR -
 WEBRETA
 가 가 PSNR
 가
 Wilcoxon test
 5 가
 5 4

Table 1.

	Cable modem		ADSL		VDSL	
	Up	Down	Up	Down	Up	Down
(Minimum)	0.91Mbps	3.63Mbps	0.48Mbps	0.95Mbps	4.91Mbps	7.56Mbps
(Maximum)	1.29Mbps	4.32Mbps	0.62Mbps	1.32Mbps	7.31Mbps	9.13Mbps
(Average)	1.08Mbps	4.15Mbps	0.51Mbps	1.12Mbps	6.15Mbps	8.37Mbps

Table 2.

Frames	PSNR			
	30Frames	15Frames	10Frames	5Frames
Bitrate	PSNR	PSNR	PSNR	PSNR
0.2Mbps	38.32dB	38.53dB	38.62dB	38.70dB
0.4Mbps	38.37dB	38.70dB	38.77dB	39.02dB
0.6Mbps	38.41dB	38.83dB	38.96dB	39.19dB
0.8Mbps	38.75dB	38.95dB	39.06dB	39.31dB
1.0Mbps	38.85dB	39.04dB	39.16dB	39.40dB
2.0Mbps	39.21dB	38.34dB	39.45dB	39.50dB
4.0Mbps	39.47dB	39.50dB	39.50dB	39.50dB
6.0Mbps	39.51dB	39.50dB	39.50dB	39.50dB
8.0Mbps	39.51dB	39.50dB	39.50dB	39.50dB
10.0Mbps	39.51dB	39.50dB	39.50dB	39.50dB

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LAN

ADSL, VDSL, Cable Modem

WEBRETA

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Wireless Mobile Network

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ActiveX Controls

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PSNR

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ADSL

0.51Mbps

PSNR 30Frame

38.40dB, 15Frames 38.71dB, 10Frames 38.78dB

5Frames 39.01dB

30Frames 4, 15Frames 3, 10Frame

3 5Frame 2

ADSL

가 Cable

modem

1.8Mbps,

PSNR 39.20dB,

4 ADSL

가 VDSL

12.2Mbps, PSNR 39.51dB,

5 가

가

가

VDSL

가

Cable Modem

ADSL

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