Ao's Notes on Medical Imaging Software

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Table 1: Revision History

Date	**Author(s)**	**Change**
Jan/30/2020	Ao Dong	Initial draft
Feb/02/2020	Ao Dong	Update

1 Software List

PACS: Picture Archiving and Communication System
TK: Tool kit
V: Visualization
A: Analysis
C: Convertion

Functions	Sftwr Name	Latest Release	Link	Source & reference	Notes
TK	VTK	2019	link	[Samala, 2014]	
TK	ITK	2019	link	[Samala, 2014]	
TK	DCMTK	2019	link	[Hasan, 2020] [Mu, 2019]	
TK	dcm4che	2020	link	[Emms, 2019] [Björn, 2017] [Hasan, 2020]	
PACS	orthanc	2019	link	[Björn, 2017] [Hasan, 2020]	
PACS V	ClearCanvas	2015	link	[Björn, 2017]	
PACS	Conquest	2020	link	[Björn, 2017]	
V	Aliza	2020	link	[Emms, 2019] [Mu, 2019]	Maybe not open source

V	3D Slicer	2019	link	[Emms, 2019] [Hasan, 2020] [Samala, 2014] [Haak et al., 2015]	
V	Mango	2019	link	[Emms, 2019] [Hasan, 2020] [Mu, 2019]	Only open source for iPad and web app version
V	Ginkgo CADx	2019	link	[Emms, 2019] [Björn, 2017] [Hasan, 2020] [Brühschwein et al., 2019] [Mu, 2019] [Haak et al., 2015]	
V	XMedCon	2019	link	[Emms, 2019] [Hasan, 2020] [Mu, 2019] [Haak et al., 2015]	
V	WEASIS	2019	link	[Emms, 2019] [Hasan, 2020] [Mu, 2019] [Haak et al., 2015]	
V	MRIcroGL	2019	link1 link2	[Emms, 2019] [Hasan, 2020] [Samala, 2014] [Haak et al., 2015]	
V	Amide	2017	link	[Emms, 2019] [Hasan, 2020] [Mu, 2019]	
V	SMILI	2019	link	[Emms, 2019] [Hasan, 2020] [Mu, 2019]	
V	ImageJ	2019	link	[Emms, 2019] [Hasan, 2020] [Samala, 2014] [Haak et al., 2015]	
V	DicomBrowser	2016	link	[Emms, 2019] [Hasan, 2020]	
V	3DimViewer	2019	link	[Björn, 2017] [Hasan, 2020] [Mu, 2019]	
V	MicroDicom	2020	link	[Mu, 2019] [Björn, 2017]	Maybe not open source
V	Horos	2019	link	[Björn, 2017] [Brühschwein et al., 2019]	

V	Osimis	2020	link	[Björn, 2017]	
V	OsiriX Lite	2013	link	[Björn, 2017] [Brühschwein et al., 2019] [Haak et al., 2015]	
V	jivex	2019	link	[Mu, 2019] [Haak et al., 2015]	Maybe not open source
V	Open Dicom Viewer	2015	link	[Mu, 2019] [Haak et al., 2015]	
V	dwv	2019	link	[Björn, 2017] [Haak et al., 2015]	
V	OHIF	2020	link	[Björn, 2017]	
V	vv	2019	link	[Björn, 2017]	
V	drishti	2018	link	[Björn, 2017]	
V	BioImage Suite	2020	link	[Haak et al., 2015]	
V	cornerstone	2018	link	[Haak et al., 2015]	
V	Oviyam	2018	link	[Haak et al., 2015]	Maybe not open source
V	MicroView	2015	link	[Haak et al., 2015]	
V	MIPAV	2019	link	[Haak et al., 2015]	
V	Slice:Drop	2019	link	[Haak et al., 2015]	
V	Fiji	2018	link	[Samala, 2014]	Distribution of ImageJ
V	GATE	2019	link	[Emms, 2019]	
V	ITK-SNAP	2019	link	[Samala, 2014]	
V	ParaView	2019	link	[Samala, 2014]	
V	MeVisLab	2018	link	[Samala, 2014]	
V	MatrixUser	2018	link	[Hasan, 2020]	
V	NextCloud	2019	link	[Hasan, 2020]	
C	dcm2niix	2019	link	[Hasan, 2020]	
V	INVESALIUS 3	2019	link	[Hasan, 2020]	
V	Trimage	2019	link	[Hasan, 2020]	
V	Gwyddion	2020	link	[Hasan, 2020]	
V	dicompyler	2016	link	[Mu, 2019]	
V	Sante DICOM Viewer Lite	2019	link	[Mu, 2019]	Maybe not open source
V	Navegatium DICOM Viewer	2014?	link	[Mu, 2019]	

2 Quality Measurements

2.1 Interoperability

There are not many measuring methods in papers, and most of them are very complicated.

- Can the workstation software (for visualization, analysis, etc.) connect with the PACS (server)?
- Does the software use output from or provide input to other software?
- Can the software work with customized plug-ins?

Measuring aspects from [Smith et al., 2018]:

- Does the software interoperate with external systems? (yes*, no)
- Is there a workflow that uses other softwares? (yes*, no)
- If there are external interactions, is the API clearly defined? (yes*, no, n/a)

2.2 Visibility/Transparency

- Does the software use any version and issue tracking system, such as Github, Gitlab for development?
- Does the software have documents recording the development process and status?
- Does the software have clear release log with essential information, such as release date, bug fixed and new features?

Measuring aspects from [Smith et al., 2018]:

- Is the development process defined? If yes, what process is used. (yes*, no, n/a)
- Ease of external examination relative to other products considered? (1 .. 10)

2.3 Productivity

Can be measured by the summation of all output (such as the number of lines of new code, the number of pages of new documents and the number of new test cases) produced per person-day.

However, it is hard for a third party to carry out the above method without knowing the exact number of developers or how much time they spent on the project.

2.4 Completeness

2.5 Consistency

References

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