

# NeuroElf Resources

<http://neuroelf.net/>

<http://neuroelf.net/wiki/doku.php>

<https://www.youtube.com/channel/UC1sM-zqnmdcZOrRf-i0FLGg> | NeuroElf youtube tutorials!

## Help

For getting detailed help on each method of xff object (e.g. fmr), use:

```
>> fmr.Help % to see all methods
>> fmr.Help('Method') % e.g. fmr.Help('Realign') to see details of each method
```

See <http://neuroelf.net/wiki/doku.php?id=obj.help>

## NeuroElf-based ERA

[http://neuroelf.net/wiki/doku.php?id=neuroelf\\_gui\\_-\\_mdm\\_voi\\_condition\\_average\\_ui](http://neuroelf.net/wiki/doku.php?id=neuroelf_gui_-_mdm_voi_condition_average_ui)

<http://neuroelf.net/wiki/doku.php?id=mdm.voicondaverage>

## DAG installation notes

1) During installation, disable (remove from path) Chronux: conflict with linec.m

2) NeuroElf functions use std.m and var.m as in newer versions of MATLAB, with 3 inputs: e.g. Y = STD(X,FLAG,DIM). Therefore, NaN toolbox functions std.m and var.m are incompatible, remove it from path. Revise sterr.m and corrcoef\_eval.m and place to lgtools.

3) Starting from NeuroElf\_v09d, many useful auxiliary scripts/functions are “hidden” behind @neuroelf method, and reside in **..\@neuroelf\private**. They can be placed in the path (i.e. copied to the main NeuroElf folder, it is not possible to add to path this private folder directly), or accessed as described in [main installation folder] / README.html > Function library:

```
>> netools = neuroelf;
>> list_of_files = netools.findfiles(startfolder, pattern);
```

Currently required functions for DAG NeuroElf-based functions (\\Sources\MATLAB\bv\_umg):

- findfiles
- checkstruct
- renamefile

- dicom\_dic

Used by ne\_pl\_fmriqasheet.m:

- psctrans
- packmosaic
- scaledata
- minmaxmean
- splittocell

4) There is a bug in NeuroElf v1.0 and v0.9d, to fix please replace the function dcm\_Value.m in /xiff/private with the function below. This function is used by createfmr.m

#### dcm\_Value.m

```
function dcmval = dcm_Value(hfile, vkey, varargin)
% DCM::Value - return a tag's value
%
% FORMAT:      dcmval = dcm.Value(key [, ...]);
%
% Input fields:
%
%      key      DICOM key (0008.0010) or tag (PatientsName)
%      ...      default value if not found
%
% Output fields:
%
%      dcmval    value for given key/tag
%
% Using: makelabel, splittocell.

% Version:  v0.9d
% Build:    14082218
% Date:     Aug-22 2014, 6:14 PM EST
% Author:   Jochen Weber, SCAN Unit, Columbia University, NYC, NY, USA
% URL/Info: http://neuroelf.net/
%
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```

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% neuroelf library
global ne_methods;

% persistent dictionaries
persistent dcmv_dicts
if isempty(dcmv_dicts)
    dcmv_dicts = struct;

    % load standard dict
    dcmv_dicts.OFFIS = ne_methods.dicom_dic(); % IK added ne_methods
and ()

end

% only valid for single file
if nargin < 2 || ...
    numel(hfile) ~= 1 || ...
    ~xffisobject(hfile, true, 'dcm')
    error( ...
        'xff:BadArgument', ...
        'Invalid call to %s.', ...
        mfilename ...
    );
end

% dict
```

```
bc = xffgetcont(hfile.L);
dict = bc.DataDictionary;

% check key
if ischar(vkey)
    vkey = vkey(:)';
    if length(vkey) == 9 && ...
        ~isempty(regexpi(vkey, '^[0-9a-f]{4}[^0-9a-f][0-9a-f]{4}$'))
        vkey = vkey([1:4,6:9]);
    end
    if length(vkey) == 8 && ...
        ~isempty(regexpi(vkey, '^[0-9a-f]+$')) && ...
        ~all(double(vkey) > 64)
        vkey = ['k_' upper(vkey(1:4)) '_' upper(vkey(5:8))];
    elseif ~strcmp(vkey, ne_methods.makelabel(vkey))
        error( ...
            'xff:BadArgument', ...
            'Invalid DICOM tag number/key given.' ...
        );
    else
        if isempty(dict)
            warning( ...
                'xff:InternalWarning', ...
                'Data dictionary not looked up.' ...
            );
            dcm_DetectDictionary(hfile, 'auto');
            dict = bc.DataDictionary;
        end
        if ~isfield(dcmv_dicts, dict)
            error( ...
                'xff:BadSetting', ...
                'Unknown DICOM dictionary set.' ...
            );
        end
        dict = dcmv_dicts.(dict);
        if ~isfield(dict, vkey)
            error( ...
                'xff:BadArgument', ...
                'Unknown DICOM tag key given.' ...
            );
        end
        vkey = dict.(vkey);
        if isfield(bc.DataKeyLookup, vkey)
            dcmval = bc.Data(bc.DataKeyLookup.(vkey)).Value;
        elseif isfield(bc.MetaKeyLookup, vkey)
            dcmval = bc.Meta(bc.MetaKeyLookup.(vkey)).Value;
        elseif nargin > 2
            dcmval = varargin{1};
        else
            error( ...
```

```

        'xff:BadArgument', ...
        'Given DICOM tag key not present in file.' ...
    );
end
dcmval = interpret_dcmval(dcmval);
return;
end
if ~isfield(bc.DataKeyLookup, vkey)
    if nargin < 3
        error( ...
            'xff:BadArgument', ...
            'Given DICOM tag not present in file.' ...
        );
    else
        dcmval = varargin{1};
        dcmval = interpret_dcmval(dcmval);
        return;
    end
end
dcmval = bc.Data(bc.DataKeyLookup.(vkey)).Value;
dcmval = interpret_dcmval(dcmval);

% numeric key format
elseif isa(vkey, 'double')
    if numel(vkey) == 2 && ...
        ~any(isinf(vkey) | isnan(vkey) | vkey < 0 | vkey > 65535)
        try
            dcmval = dcm_Value(hfile, sprintf('%04x%04x', vkey(1),
vkey(2)), varargin{:});
        catch ne_eo;
            rethrow(ne_eo);
        end
    elseif numel(vkey) == 1 && ...
        nargin > 2 && ...
        isa(varargin{1}, 'double') && ...
        ~isinf(vkey) && ...
        ~isnan(vkey) && ...
        vkey >= 0 && ...
        vkey < 65536 && ...
        numel(varargin{1}) == 1 && ...
        ~isinf(varargin{1}) && ...
        ~isnan(varargin{1}) && ...
        varargin{1} >= 0 && ...
        varargin{1} < 65536
        try
            dcmval = dcm_Value(hfile, sprintf('%04x%04x', vkey,
varargin{1}), varargin{2:end});
        catch ne_eo;
            rethrow(ne_eo);
        end
    else

```

```
        error( ...
            'xff:BadArgument', ...
            'Invalid DICOM tag (or key) given.' ...
        );
    end
    dcmval = interpret_dcmval(dcmval);

else
    error( ...
        'xff:BadArgument', ...
        'Invalid DICOM tag (or key) given.' ...
    );
end

% sub function
function dcmval = interpret_dcmval(dcmval)
    global ne_methods;
    if ischar(dcmval) && ...
        ~isempty(dcmval)
        dcmval = dcmval(:)';
        if ~isempty(regexpi(dcmval, ...
            '^s*[\+|-]?d+(\.d+)?([eE][\+|-]?d+)?(s*\s*s*[\+|-]
]?d+(\.d+)?([eE][\+|-]?d+)?)*s*$'))
            dcmvalc = ne_methods.splittocell(dcmval, '\');
            dcmvaln = zeros(1, numel(dcmvalc));
            try
                for vc = 1:numel(dcmvalc)
                    dcmvaln(vc) = str2double(dcmvalc{vc});
                end
            catch ne_eo;
                neuroelf_lasterr(ne_eo);
                return;
            end
            dcmval = dcmvaln;
        end
    elseif isnumeric(dcmval)
        dcmval = double(dcmval);
    end
end
% end of function dcmval = interpret_dcmval(dcmval)
```

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