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MÉTODOS

[TIP7188 - Filtragem Adaptativa] Author: Lucas Abdalah

filter_hw.m

filter_hw is a package developped for the Adaptative Filtering Course It is a way to make a compilation for all function

CONTENT

```
SAVE DATA TO TXT FILE
    filter_hw.MAT2TXT      - Write a matrix X into a txt file
    filter_hw.TENSOR2TXT   - Write a 3D tensor X into a txt file

PLACE HOLDER

classdef filter_hw

methods(Static)
```

HOMEWORK 2 - PROBLEM 5

```
function hw2p5(varargin)
% FILTER_HW.HW2P5  Perfom the error surface propose on the Hw 2,
 problem 5
%
%
%   See also.

    if isempty(varargin)
        save_results = false;
    else
        save_results = varargin{1};
    end

    N = 25;
    w_lim = 100;
    w = [linspace(-w_lim,w_lim,N); linspace(-w_lim,w_lim,N)];
    [w_0, w_1] = meshgrid(w(1,:), w(2,:));
    J_surface = @(w_0, w_1) 24.40 - 4.*w_0 - 9.*w_1 + w_0.^2 + w_1.^2;
    J = J_surface(w_0, w_1);
    h = figure();
    surf(w_0, w_1, J, 'EdgeColor', 'none');
```

```
    colormap turbo;
    xlabel('$w_0$', 'FontSize', 16, 'interpreter', 'latex');
    ylabel('$w_1$', 'FontSize', 16, 'interpreter', 'latex');
    zlabel('$J$', 'FontSize', 16, 'interpreter', 'latex');
    view([-24.5036297640653 47.6514617014408]);
    colorbar('box', 'off');
    grid on;
    axis tight;
    filter_hw.export_fig(save_results, h, 'figures/hw2p5');
end
```

VERBOSE DETAILS

```
function export_fig(Activate, h, filename)
    if Activate
        savefig_tight(h, filename, 'both');
        filter_hw.verbose_save(filename);
    else
        pause(1)
        close(h);
    end
end

function verbose_save(filename)
    fprintf('Saving Results for:\n\t %s \n', filename);
end
```

SAVE DATA TO TXT FILE

```
function mat2txt(filename, X, permission, header)
% ND.MAT2TXT  Write a matrix X into a txt file
%   mat2txt(filename, X, 'w', header) - Overwite the file
%   mat2txt(filename, X, 'a', header) - Append to the file end
%
%   See also.
        [I, J] = size(X);
        fileID = fopen(filename, permission);
        fprintf(fileID, [repelem('-', strlength(header)+3), '\n',
 header, ...
                '\n', repelem('-', strlength(header)+3), '\n']);
        fprintf(fileID, 'X(%d, %d)\n', I, J);
            for ii = 1:I
                for jj = 1:J
                    fprintf(fileID, ' %2.0f', X(ii,jj));
                end
                fprintf(fileID, ';\n');
            end
        fprintf(fileID, '\n');
        fclose(fileID);
end
```

```
% end methods list
end
end
```

```
ans =
  filter_hw with no properties.
```

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