Hard metrology of the human visual perception

by

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Bachelor of Engineering (B. Eng.)

in Mechatronics

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Sabina Rebeggiani (Halmstad University)

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Preface

Abstract

Kurzfassung

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B. List of Companies

Company: Volvo Cars

Website: `https://www.volvocars.com/se`

Company: The MathWorks, Inc.

Website: `https://www.mathworks.com/`

Company: National Instruments

Website: `https://www.ni.com/`

Company: Tamron

Website: https://www.tamron.com/

Company: LUCID Vision Labs

Website: https://thinklucid.com/

Company: Thorlabs, Inc.

Website: https://www.thorlabs.com/

Company: DIGI International, Inc.

Website: https://www.digi.com/

Company: MikroTik

Website: https://mikrotik.com/

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E. Source Code

E.1. C - Code

```
function TransmissionEvaluation()
% FUNCTION NAME:
%    TransmissionEvaluation()
%
% DESCRIPTION:
%    Computes the the average intensity of all binary
%         images in a directory selected by the user.
%
% INPUT:
%    None
%
% OUTPUT:
%    None
%
% Created:
%    Author:                 Lukas Schwoerer
%         Date:              03.07.2020
%         Version:           V1.0
%

%% Initialize variables
clear all
listcounter = 1;


%% Select image folder and compile image list
path = uigetdir(pwd, 'Select image folder');
dircontent = dir(path);

for i = 1 : length(dircontent)
        if contains(dircontent(i).name, '.bin')

                imagelist(listcounter) = strcat(dircontent(i).
                    folder, "/", dircontent(i).name);
                listcounter = listcounter + 1;

        end
end

```

```

%% Calculate mean value for all images in imagelist
for i = 1 : length(imagelist)

        fid = fopen(imagelist(i),'r');
    tmpimg = fread(fid,[2048, 2048],'*uint16'); %Read images from binary file
    fclose(fid);

        tmpimg = double(tmpimg)/2^12; %Scale 16bit image value into a range from 0-1

        disp(imagelist(i)); %Display image name
        disp(mean(tmpimg, 'all')); %Display mean intensity

end
end
```

E.2. Python Code

```
function TransmissionEvaluation()
% FUNCTION NAME:
%    TransmissionEvaluation()
%
% DESCRIPTION:
%    Computes the the average intensity of all binary
%         images in a directory selected by the user.
%
% INPUT:
%    None
%
% OUTPUT:
%    None
%
% Created:
%    Author:                Lukas Schwoerer
%         Date:             03.07.2020
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end

```

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       from binary file
    fclose(fid);

        tmpimg = double(tmpimg)/2^12; %Scale 16bit image value
            into a range from 0-1

        disp(imagelist(i)); %Display image name
        disp(mean(tmpimg, 'all')); %Display mean intensity

end
end
```

Eidesstattliche Erklärung

Name: Schwörer	**Vorname:** Lukas
Matrikel-Nr.: 65283	**Studiengang:** Mechatronik

Hiermit versichere ich, **Lukas Schwörer**, an Eides statt, dass ich die vorliegende Bachelorarbeit
an der **University of Halmstad**
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