

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF
KAZAKHSTAN

JSC “Kazakh-British Technical University”
Department of Computer Engineering

ADMITTED TO DEFENCE

Head of Computer
Engineering Department
c.t.s., assistant professor

B. K. Dlimbetov

“____” _____ 2011

EXPLANATORY NOTE
to graduation work

Theme: “Mini-Game ‘Simulation Of The Image Enhancement’
And Visualization Of The Learning Scripts To The Lectures
‘Computer Vision’”

Consultant on economic issues:
Doctor of Economics Science, professor

O.A. Yanovskaya

“____” _____ 2011

**Consultant on safety engineering and
labour protection measures:**
Master

Zh. T. Rakhmanova

“____” _____ 2011

Norms Compliance Monitor:
c.t.s., docent

R. M. Duzbayeva

“____” _____ 2011

Supervisor:

Prof. Dr. Nailja Luth
University of Applied Sciences
Amberg-Weiden, Germany

“____” _____ 2011

Supervisor:
c.t.s., docent

R. M. Duzbayeva

“____” _____ 2011

Student:
V. V. Kotov

Major:
5B070300 — Information Systems

Almaty, 23th of May 2011

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ASSIGNMENT
for graduation work planning

Student: V. Kotov

Major: Information Systems

Theme: “Mini-Game ‘Simulation Of The Image Enhancement’ And Visualization Of The Learning Scripts To The Lectures ‘Computer Vision’”

Approved by: KBTU, act # 148-P dated 8th of October, 2010

Submission deadline: 23th of May 2011

Initial data to the project:

International standards (e.g. IEEE 1063-1987, ISO 12207, ANSI/IEEE 983, State Standard 34.201, etc.).

List of questions for graduate work development:

Analytical review, perspective on edutainment and usage of video games in education, examples, “DBB-Crackers” game mechanics

Designing, analysis of image enhancement techniques used in Computer Vision, opportunities for PDF-rendering in Unity game development environment, designing prototypes of “Image Enhancement Tool”, “PDF-Reader”, “PDF-Converter”

Development, the “Image Enhancement Tool” with following functionality:

- Custom LUT/transfer function based image modification (with complex logical functions available)
- Threshold

- Histogram equalisation

“PDF-Reader” and “PDF-Converter” implementation

Application and experiments, testing of “Image Enhancement Tool”, application of thesis results to production: possible challenges, benefits and opportunities

List of diploma project advisers in connection with the diploma paper sections:

Section	Adviser, department
The economic part	Yanovskaya O.A., “Department of Economics and Management”
Labour protection part	Rakhmanova Zh. T., “Department of Petroleum Engineering”

Date of assignment receipt: 10th of January 2010

Supervisors

Prof. Dr. Nailja Luth
c.t.s., docent R.M. Duzbayeva

Student

Vadim Kotov

“_____” _____ 2011

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“_____” _____ 2011

SCHEDULE
for graduation work

Student: V. Kotov

Major: Information Systems

Theme: “Mini-Game ‘Simulation Of The Image Enhancement’ And Visualization Of The Learning Scripts To The Lectures ‘Computer Vision’”

Supervisors: Prof. Dr. Nailja Luth, Senior Lecturer R. M. Duzbayeva

Type of work	Deadline
1. Diploma title and supervisor settlement.	October

Type of work	Deadline
<ol style="list-style-type: none"> 1. Arrival at HAW-AW¹ university 2. Introduction to the “DBB-Crackers” game. Discussion of the project assignment 3. Definition of goals and objectives of the project. Clarification of goals and objectives priority 4. Formulation of research objectives and its characteristics 5. Analytical review: perspective on edutainment and usage of video games in education, examples, “DBB-Crackers” game mechanics 6. Familiarisation with software (Unity) and game prototype 	January
<ol style="list-style-type: none"> 1. Analysis of image enhancement techniques and algorithms of used in Computer Vision, opportunities for PDF-rendering in Unity game development environment 2. Designing prototypes of “Image Enhancement Tool”, “PDF-Reader”, “PDF-Converter” 3. Gaining necessary background information of the thesis papers 	April
<ol style="list-style-type: none"> 1. Development of algorithms, specific for the target platform 2. Testing the software on possible logical errors 3. Experimenting and comparing the results of the work of Image Enhancement Tool with such software, as Adobe Photoshop. Summing up appropriate conclusion 	March

¹University of Applied Sciences Amberg-Weiden

Type of work	Deadline
<ol style="list-style-type: none"> 1. Submission of the results of the project to the University of Applied Sciences Amberg-Weiden. Finding possible issues and benefits. 2. Preparation the graphic material for the thesis report 3. Preparation of the explanatory note 4. Presentation of the thesis project 	May

Head of Computer Engineering Department

B.K.Dlimbetov

Abstract

Here you should write your Abstract. Use this command to see the no of the last page: 21.

Compact list:

- Item 1
- Item 2

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INTRODUCTION

Section without an index number

Not a random URL: `http://behance.net/vadim-1`.

Cite using [?]

Another chapter

Visualisation of the learning scripts to the
lectures “Computer Vision”

Figure 1: A title in the text

A shortcut for the reference.

1. CHAPTER

Blah-blah

1.1 Section with an index number

Blah blah-blah.

1.2 Another section

This section describes the section content.

1.2.1 “Subsection with quotes”

Items:

- Item 1
- Item 2 & and sign.

Equation example:

$$\text{Luminance contrast} = \frac{\text{Luminance difference}}{\text{Average luminance}}$$

2. THEORETICAL BACKGROUND

All the same here

3. IMPLEMENTATION

An algorithm example

Instantiate the parser

$value \leftarrow 0$

for $i = 1$ to 256 **do**

$value \leftarrow \text{parser.ParseFunction}(\text{function}, i)$

if $value < 0$ **then**

$value \leftarrow 0$

else if $value > 255$ **then**

$value \leftarrow 255$

end if

save value to the LUT

end for

Code example:

```
1 /// <summary>Create a new instance of Ghostscript.</summary>
2 /// <param name="pinstance"></param>
3 /// <param name="caller_handle"></param>
4 /// <returns>The instance passed to other GS function</returns>
5 [DllImport("gsdll32.dll", EntryPoint="gsapi_new_instance")]
6 private static extern int gsapi_new_instance (out IntPtr pinstance,
7     IntPtr caller_handle);
8
9 /// <summary>This will make the conversion</summary>
10 /// <param name="instance"></param><param name="argc"></param>
11 /// <param name="argv"></param>
12 /// <returns>0 if is ok</returns>
13 [DllImport("gsdll32.dll", EntryPoint="gsapi_init_with_args")]
14 private static extern int gsapi_init_with_args (IntPtr instance,
15     int argc, IntPtr argv);
16 /// <summary>Exit the interpreter</summary>
17 /// <param name="instance"></param><returns></returns>
18 [DllImport("gsdll32.dll", EntryPoint="gsapi_exit")]
19 private static extern int gsapi_exit (IntPtr instance);
20
21 /// <summary>Destroy an instance of Ghostscript.</summary>
22 /// <param name="instance"></param>
23 [DllImport("gsdll32.dll", EntryPoint="gsapi_delete_instance")]
24 private static extern void gsapi_delete_instance (IntPtr instance);
```

4. EXPERIMENTAL PHASE

5. ECONOMIC INFLUENCE

6. LABOUR AND HEALTH SAFETY

CONCLUSION

A. CODE SNIPPETS

A.1 Code