
Prevention of plagiarism in computer graphics projects

Jana DANNHOFFEROVÁ, Dita DLABOLOVÁ
Mendel University in Brno, Czech Republic

In recent years, a great attention has been paid to detection of plagiarism in essays that students write within the study of various courses. A great deal of work has been also done in the field of prevention of plagiarism and the formulation of rules of good practice. However, there are still areas of detection and prevention of plagiarism that need to be strengthened. For example, essays are not written in all courses. In some of them, there are outputs in the form of graphical data instead of text data. Courses like Computer graphics or Graphic design are taught not only at art schools. In the Czech Republic, students can often attend these courses also at economic or technical schools.

Instead of written essays, the students process practical projects on a given topic created in various graphic programs (e.g. Adobe Photoshop, Adobe Illustrator, Cinema 4D, Rhinoceros, 3D Studio Max etc.). Unfortunately, there are a large number of servers on the Internet where these projects can be downloaded very easily and it is often very difficult to reveal the student's deception from the position of a teacher. Especially when the course is attended by a large amount of students.

Workshop participants will get an inspiration on how to limit plagiarism in a series of graphic projects aimed at verifying students' skills in areas of vector, raster and 3D graphics. The inspiration is based on our many years' experience from the course Computer Graphics taught at the Faculty of Business and Economics at Mendel University in Brno (Czech Republic). The final part of the workshop will be dedicated to discussion and exchange of the best practices.

Circa 120 students attend the course Computer Graphics every year, the students' majors are mainly computer science and economics and management. The aim of the course is to introduce theory of the computer graphics and also provide working knowledge of basic techniques in vector, raster and 3D graphic programs. The end of the semester is devoted to art informatics and fractal geometry. The students prepare three practical projects in different graphic programs during the semester. The first project is implemented in a vector editor (Adobe Illustrator/Affinity Designer) and is focused on creating a series of pictograms. The second project is implemented in a raster editor (Adobe Photoshop/Affinity Photo) and is focused on creating digital photo collage. The third project is implemented in a 3D editor (Rhinoceros) and is focused on creating a 3D model. Students have an opportunity to improve their evaluation by submitting a fourth optional project from fractal geometry. The points from this project are added to the final exam test.

In the past, teachers of this course had to deal with a large number of cases when students downloaded the projects from the Internet. One of the reasons was that teachers put high demands on students. For example, as a part of vector graphic project, students were supposed to create logos and logotypes, which was very difficult for the students of computer science and economics without artistic talent, aesthetic feeling and experience. The goal of the project was to master basic techniques in the vector editor, not submitting a good-look-



ing project. Even though the students knew it, they preferred to download projects from the logo bank on the Internet. They obviously did not want to be ashamed of their work. As a solution of this situation - instead of a logo, students were given task to create a pictogram. Why the pictogram? The pictogram is one of the paths leading to the creation of a logo. There is a quite simple technique for constructing a pictogram based on a real-life photo (method of circles). This procedure can be handled by everyone (even without any talent or art knowledge) with good results. An important finding for students was that they knew in advance that they were able to create the project by their own strengths. Following this change, the number of detected fraud cases has dropped considerably. However, teachers still had to deal with cheating in a 3D graphic projects.

The situation with the three projects and the cheating of the students was finally solved by their thematic interconnection. Students choose a certain topic at the beginning of the semester, and this topic stays the same for all three projects. Everyone chooses mostly a topic that is close to him or her (e.g. automobiles, aircraft, animals, plants, means of communication, well known buildings etc.). Some students choose a topic, which is close to the company they work in during their studies or close to the subject of their own business. It significantly contributes to greater engagement of students in the projects. In the first project students create a series of three pictograms according to already existing pictures in a digital form. These images are used by the students to process the second project and to create the digital collage in the raster editor. The theme is also transferred to the third project. Students create a 3D model of one of the three objects that has been transformed into the pictogram. This concept has been maintained in the course of Computer graphics since 2006. All this time, only a few cases of cheating have been dealt. In the case of a suspicion that a student did not process the project himself/herself, he or she is invited to explain used the techniques that led to the result project. If a student downloaded a 3D graphic project from the Internet, it would be very difficult to get the appropriate digital collage and the series of pictograms.

Examples of students` work, including the cheating attempts will be available at the workshop as illustration. Although it is almost impossible to detect all cases of cheating, teachers of the course significantly reduced their number. On the other hand, we are aware of the limits of our approach, hence the final the workshop will be dedicated to an exchange of best practices among the participants in detecting and prevention of students` fraudulent behavior in the processing of graphic projects. Participants` findings may help to generalize the recommendations.

Keywords: computer graphics, projects, prevention, plagiarism, best practices.