

CGEMS – Computer Graphics Educational Materials Source

Submissions and Editorial Policies

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Abstract

CGEMS, the online Computer Graphics Educational Materials Source is a web-based groupware application that supports the submission, review, acquisition and archiving of curricular resources.

The rapid change of technology associated with computer graphics requires educators to become proficient with novel techniques and develop deeper insights on computer-generated images. As the core field becomes more mature, educators in all computer graphics disciplines have a greater need for high-quality curricular resources. By providing a repository for such materials, we can achieve a higher standard of teaching worldwide.

The purpose of CGEMS is to provide tools to support the community of computer graphics educators. CGEMS will allow their work to be appraised, assessed and made available to others through an online server for refereed educational content in computer graphics.

The CGEMS server operation and workflow are described in a communication to the SIGGRAPH 2003 educators program [SG03]. Lacking in that paper, however, are the submission and editorial policies, which we describe in the present submission.

1 Introduction

The Computer Graphics Educational Materials Source (CGEMS) is an online system that provides curricular material for computer graphics educators. A version of the server is available at the URL <http://cgems.inesc-id.pt>. The system includes a method for contributors to submit and editors to jury and control the quality of content to

ensure sound and robust materials. The shape and components of CGEMS arose from fruitful discussions around, during, and after the Workshop on Computer Graphics Education [CGE02] held in Bristol, UK in July 2002. Figure 1 shows the CGEMS initial page.

The fast pace of change in the computer graphics (CG) field makes it difficult for educators to continually design up to date, meaningful and robust curricula that address the full potential of new technology. Although small systems and groups of people exist who are trying to address this issue, there is currently no centralized worldwide-refereed repository for computer graphics educational materials. Our system supports a way for educators to easily access quality course materials and for contributors to share and get recognition for their curricular innovations. The specific details of the CGEMS system were presented as part of the SIGGRAPH 2003 educators program [SG03].

The CGEMS project will serve the computer graphics educational community on a number of levels. First, by making timely and quality materials available to educators, those teaching in the rapidly changing CG field will be able to tap into resources that will aid in their efforts to keep pace. Often it is not enough to know how the technology works, rather it is most important to understand its implications and how best to apply it. Only at this point can an educator design materials for students that fully reveal the potential of the technology. The collective contributions of the computer graphics community will add to a network of knowledge and understanding that educators may use to provide content rich courses.

Curricular development in a technically complex and rapidly changing landscape is not trivial. Rather, a successful curriculum is creative and innovative and deserves research recognition. The CGEMS project seeks to support these efforts by providing an opportunity to have curricular materials peer reviewed, thus making them worthy of recognition. In order to facilitate content availability and peer recognition, CGEMS implements policies for submission and the subsequent editorial review of materials. In this paper, we explain submission and editorial policies.

2 Submission Policy

We encourage members of the computer graphics community to submit course innovations for consideration in CGEMS. In order to submit, authors must first register through the online server. Once complete, they will have a personal web page that they will be able to use to submit modules, change their login password, change their personal details, and check their submission status and information, resubmit modules, or interact with the editorial board concerning their submissions. The details

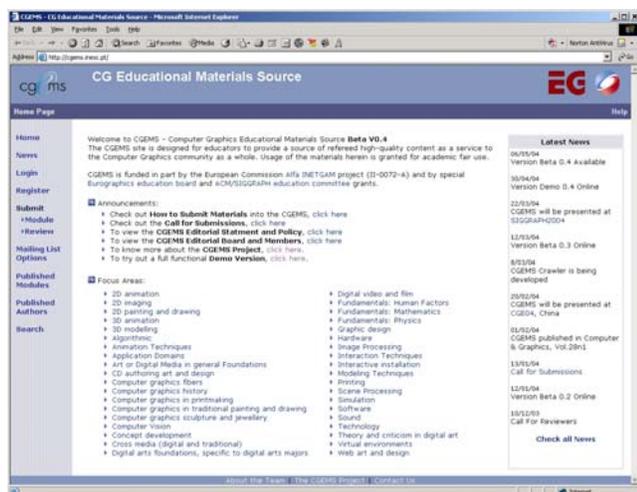


Figure 1 - CGEMS Initial Page

of this process were covered as part of a presentation at the SIGGRAPH 2003 educators program. The submission policy includes the content authors may submit, information that authors need to provide, categories or focus areas, and fair use policies.

Ideally, we would like to have content organized in *modules*, or a complete group of materials including notes, assignments, and examples that cover a specific subject. For example, a module could be about shading networks for 3D modeling and the materials might include course notes, interactive demonstrations, assignments, and example student work.

There are many quality-teaching materials that do not fall neatly into the module format, so the CGEMS server will also accept portions of modules, such as individual assignments or course notes. We are specifically looking for the following materials:

1. **Complete Modules** – These are the *preferred* type of submission. A module is a self-contained, single-topic teaching unit. This includes all course materials required (images, notes, problem sets, etc.)
2. **Annotated Course Syllabi** – These serve mainly as a best-practices repository. A complete course syllabus provides not only a set of educational units, sequences, pedagogical approaches, but also *the rationale* behind the choices made by the educator in preparing the course. Ideally, course reports could complement the syllabus to enrich the usability of these submissions.
3. **Lab Notes** – Again these are complete sets of materials with a complete discussion to serve as exemplar presentations and foundations for educators to prepare their own laboratory sessions.
4. **Problem Sets** – These are provided much in the same vein as lab notes. A problem set should not only contain the assignments themselves, but also the rationale and structure underlying these.
5. **Lessons / Teaching Gems** – These are similar to modules but more narrowly focused bits of teaching material that highlight an approach to teaching a particular problem in either introductory or advanced settings.
6. **Annotated Student Work** such as images, interactive pieces, URLs, videos, etc. These are representative bodies of student work that can in turn be used as support materials for classes.

We will accept the material in most common formats (PDF, Java, VRML, JPEG, GIF, MPEG, etc). The main rationale for accepting a given format will be the existence of free, publicly available viewers for that format. While the subject of proprietary formats has been thoroughly debated, we want to strive for maximum availability and usefulness of published materials.

When submitting the work, authors will be asked to provide information about themselves and their submission. In addition to name (s), content, and actual submission, the authors must prepare keywords, an abstract, system and software requirements, instructions, the type of submission (assignment, module, etc), prerequisites, the intended audience, and subject categories. These keywords and subject matter categories will help educators search for and identify appropriate materials available on the CGEMS server. The requirements include not only hardware or system specifications, but could also include a list of

software. In the case of the shading networks example, the course notes might not be conceptual and specifically cover how to create them using Maya software. In this case, Maya software would be listed as a requirement. Other notes on shaders, for example, might be more general and only require any 3D modeling software.

Finally, it is important that authors include specific instructions about how to work with their submission. Perhaps certain extensions need to be enabled or disabled or the files need special processing or installation. The author will include instructions such as these in the remarks section. To be accepted, a submission will not only need to work, but it must be clear how to implement the content.

Because most courses assume some level of experience or expertise in a given discipline, authors will be asked to include prerequisite courses or knowledge. This will help other educators identify the appropriateness of a module or material. Although this sort of classification is not universal, a general list of skills necessary for the course material would be sufficient.

Related to the prerequisite experience is the intended audience. Is the module designed for elementary school art classes or college level graphics programming? As with the prerequisites, this will help other educators identify appropriate courseware.

Because we accept educational material associated with computer graphics from any discipline, it is important for authors to correctly identify their submissions in categories, or what CGEMS refers to as *focus areas*. These are specializations within a discipline that the materials cover. For example, focus areas within the arts include digital imaging, 3D modeling, and digital video. See appendix A for a full list of art focus areas. Similar lists do not yet exist for computer science and general science, although they are expected to appear in the near future, partially as a result from the CGEMS effort.

Finally, any educator may use all submitted work for educational purposes. Fair use does not include applications of the materials for any purpose other than teaching. Educators who use the materials may not distribute them outside of class or publish them in any other way. Educators who download materials will be asked to accept a fair use agreement before accessing materials. Our intent in having a fair use policy is to encourage educators to submit and reuse materials freely from the server with due credit being assigned.

We intend for the submission policies to help streamline the content for those who will use CGEMS. Although still under development, the categories or *focus areas* will help educators quickly identify the proper content. *Modules* will also aid in streamlining the process because they will contain a complete set of materials for a subject or perhaps an entire course. However, separate assignments will also be helpful as long as they can be identified by *focus area* and *type*.

3 Editorial Policy

The CGEMS server will contain quality educational materials that will be dependent on rigorous reviews and continual updates. The general editorial structure of CGEMS includes one or more editors-in-chief (EIC) and an editorial board. The editorial board will both review submissions in their given expertise and solicit outside reviewers in specific disciplines for input.

The editorial board will also be responsible for soliciting content submissions as well as advising the EICs

on quality control of the server and identifying needs for under-covered curricula. Further details of the editorial structure were covered as part of the SIGGRAPH 2003 Educators Program.

The reviewers will be asked to screen materials on a number of different levels with some reviewers checking specific criteria. All general reviewers will examine materials for pedagogical content and the quality of student examples. By pedagogical content we mean the relevance of the assignments and notes to the specified focus area and the overall flow of the courseware. Referees will ask questions such as, "Are the materials designed for optimal learning outcomes?" They will additionally review the overall structure of the submission for things like readability and grammar.

Other reviewers will inspect the portability of software, examples, and other content when applicable as well as the robustness of assignments and examples. When the need arises, they will test examples and try out software.

Reviewers will also be responsible for making the editorial board or the EIC aware of outdated materials. Authors will be given the opportunity to update materials and classify them as newer versions. The amended materials will be reviewed in the same manner as the original work.

After all reviews have been produced for a selected module the EIC checks and resolves any existing conflict and decides whether a submission is: (a) accepted for publication; (b) must be revised according to the comments made by reviewers; or it is (c) rejected. Authors will eventually resubmit modules sent back for revision, starting a new review cycle. All submissions accepted for publication are then checked to see whether or not they are ready to be published. This may involve some extra work such as checking if the documents contained in a module are printable or if they require additional formatting or redactional changes. More important, the task of cataloging and classifying modules for accepted contributions remain before making these available for downloading.

CGEMS will rely on an efficient review cycle that will require the reviewers to make decisions about submissions in a timely manner. The success of the server will depend on reasonable turnaround time and strict enforcement of quality publications. The level of excellence will be monitored by the reviewers, but will also depend on feedback from the user community. In the future we hope to implement a way for educators to rate and comment on the success or applicability of any given material.

4 Conclusions

We have briefly presented the submission, review and acceptable use policies for CGEMS, the online Computer Graphics Educational Materials Source.

CGEMS aims at providing tools to nurture a community of computer graphics educators, by allowing their work to be appraised, assessed and made available to others through a repository for refereed educational content in computer graphics.

The CGEMS project is currently at version 0.4 Beta and it is now nearing version 1.0. At the time of this writing, we

have issued the first call for Reviewers followed by the first call for contributions. The editorial board includes 35 registered and accepted reviewers from all over the world, 25 volunteer applications waiting to be accepted or rejected, 68 invited reviewers who have not yet decided to accept or reject our invitations. 34 authors have expressed interest in submitting modules or otherwise participating in the community. Several submissions are already in the pipeline in all stages of reviewing process and one is already accepted for publication.

The reviewing policies and workflow are described in a communication to the SIGGRAPH 2003 educators program. In this paper we have briefly covered the editorial and fair use policies that we think will motivate educators to view the repository as a focal point and a tool for collaboration and dissemination of quality materials for spreading the gospel of Computer Graphics.

References

- [CGE02] Proceedings, Eurographics/SIGGRAPH Workshop on Computer Graphics Education, Bristol UK, July 2002. <http://virtual.inesc.pt/cge02>
- [CGEMS] Computer Graphics Educational Materials Source project <http://cgems.inesc.pt>
- [GVE99] Documentation of Workshop on Graphics and Visualization Education, Coimbra, Portugal, <http://www.eg.org/WorkingGroups/GVE/GVE99>
- [SG03] CGEMS – Computer Graphics Educational Materials Server, F. Figueiredo, D. Eber, J. Jorge, SIGGRAPH'03, ACM/SIGGRAPH 2003 Educators Program, San Diego, July 2003.

APPENDIX A

FOCUS AREAS

- 2D imaging
- 2D painting and drawing
- Art foundations or digital media in general foundations
- Digital arts foundations, specific to digital arts majors
- 3D modeling
- 2D animation
- 3D animation
- Graphic design
- Web art and design
- CD authoring art and design
- Interactive installation
- Virtual environments
- Digital video and film
- Concept development
- Computer graphics history
- Theory and criticism in computer art
- Cross media (digital and traditional)
- Algorithmic
- Sound
- Printing
- Computer graphics in traditional painting and drawing
- Computer graphics in printmaking
- Computer graphics fibers
- Computer graphics sculpture and jewelry