Engaging Education Techniques and Assignments Format*

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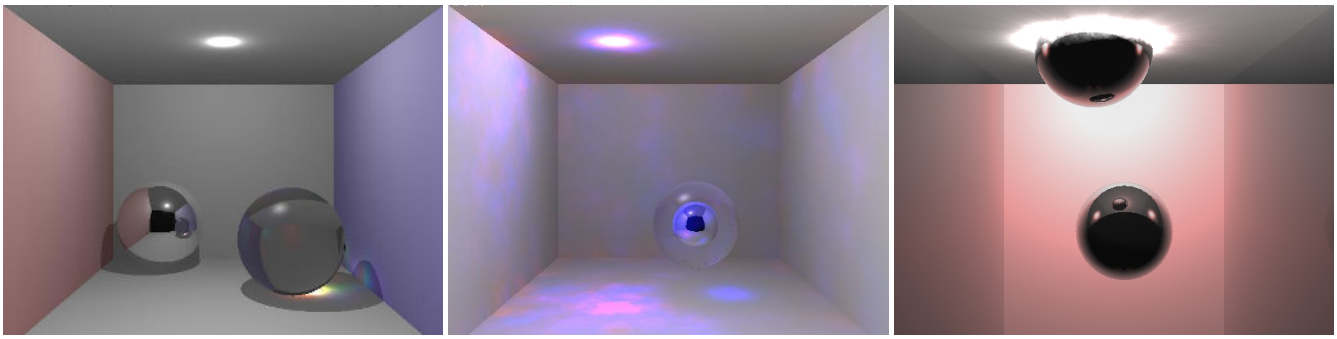

Figure 1: Example photon mapping student images from Clemson's Fall 2011 and Spring 2012 course on Data Structures and Algorithms. From left to right: Jason Anderson, Daniel Willard, and Shi Zheng.

ABSTRACT

This SIGGRAPH Engaging Education Techniques and Assignment conforms to the formatting guidelines for ACM SIG Proceedings. It is meant to highlight section headings and required content.

CCS CONCEPTS

• **Computing methodologies** → Animation; Rendering; Image manipulation; Graphics systems and interfaces; Image compression; Shape modeling.

KEYWORDS

CGEMS, EETA, LaTeX

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1 OVERVIEW

This document provides a template for the ACM SIGGRAPH EETA LaTeX format, based on the `samplebody-conf.tex` example available in ACM's `acmart` LaTeX distribution. Please see those examples for specification of such things as font type, math equations, citations, tables, figures, and the like. Currently, for SIGGRAPH submission, authors should use the ACM SIGGRAPH format, not the TOG format.

The objective of EETAs is to collect *engaging education techniques and assignments* related to computer graphics education. The content specification amalgamates several sources, starting with the original stipulations made by Figueiredo et al. [2003, 2004], with updated revised submission requirements (e.g., format of the EETA publication) as well as the assignment's contribution to the Computer Graphics (CG) curriculum.

Acting as a template for an EETA submission, we request that submitters identify where in the EETA taxonomy the engaging education techniques and assignment belongs (within the CG curriculum). We require three criteria:

(1) the selection of appropriate topic heading,
(2) the assignment's curricular level (e.g., undergraduate, etc.),
(3) explanation of the curricular level nomenclature, i.e., please do not assume that readers are familiar your country's educational system and please do explain what is meant by the given specification (e.g., the EETA is part of a 16-week course taught to students in their first year of a 4-year program).

For the submission format, we start with the *nifty assignment* format adopted by SIGCSE, ACM's Special Interest Group on Computer Science Education. We then consider the ACM's Computing Classification System (CCS) and the ACM/IEEE-CS Joint Task Force

Table 1: EETA metadata in tabular format.

Summary	What is the EETA about, what do students learn?
Learning Outcomes	What should students who complete this assignment be able to explain, describe, implement, etc. (using active verbs from Bloom's taxonomy)?
Classification(s)	What is he curricular topic addressed by this assignment (e.g., Animation, Fundamentals, Modeling, etc.; there could be overlap among several—see Classification)?
Audience	What is the assignment's curricular level (e.g., CS1, CS2, junior, senior, etc.)?
Dependencies	What is students' required prior knowledge, what else must be in place for students to carry out the assignment?
Prerequisites	Does this assignment build on any other assignments, e.g., is it a module in a sequence?
Strengths	What do (you think) students like about this assignment?
Weaknesses	What do (you think) students dislike about this assignment?
Variants	Are there any variants students can explore?
Assessment	What are the assessment criteria?

on Computing Curricula [2013] as useful taxonomies for helping specify the EETA metadata.

EETA submissions should follow nifty assignment examples accepted by SIGCSE, available at **`http://nifty.stanford.edu`**, but be related to computer graphics.

The EETA article is a short (2 page) contribution that roughly follows the structure of this template, including the given section headings: **Overview**, **Metadata**, **Materials**. The Overview should provide information related to what the assignment is about, and what is asked of the student. The Overview could also state why the authors think the assignment is the strongest.

2 METADATA

Metadata consists of tabular data given in Table 1. Pay special attention to the Classification, which is based on topics from both the ACM Computing Classification System (CCS) and the ACM CS 2013 Curriculum: Graphics & Visualization (GV). Categories are:

(1) Animation
(2) Computational Geom. (Alg. and Complexity)
(3) Fundamentals
(4) Graphics & Interfaces
  (a) GPUs
  (b) Input Devices
  (c) Mixed/Aug. Reality
  (d) Perception
  (e) File Format
  (f) Virtual Reality
(5) Image Compression
(6) Image Manipulation
(7) Modeling
(8) Rendering
(9) Shape Modeling
(10) Visualization

Specify also who is the groovy graphics assignment intended for as student backgrounds will differ, e.g., they may be programmers, artists, interdisciplinary students, etc.

3 MATERIALS

Materials should list what comprises this groovy graphics assignment, e.g., the specification (e.g., instructions to students), assumed pre-requisites, required files, example inputs, etc. Specifications for programming assignments should attempt to remain platform- and language-agnostic, e.g., use pseudocode.

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A ACM COMPUTING CLASSIFICATION SYSTEM (CCS)

The ACM Computing Classification System lists the following Computer Graphics subtopics:

(1) Animation
(2) Graphics Systems and Interfaces
  (a) Graphics Processors (GPUs)
  (b) Graphics Input Devices
  (c) Mixed / Augmented Reality
  (d) Perception
  (e) Graphics File Format
  (f) Virtual Reality
(3) Image Compression
(4) Image Manipulation
(5) Rendering
(6) Shape Modeling

B ACM CS 2013 CURRICULUM: GRAPHICS & VISUALIZATION (GV)

The ACM CS 2013 Curriculum lists the following GV subtopics:

(1) Animation
(2) Computational Geometry (Algorithms and Complexity)
(3) Fundamentals
(4) Machine Vision and Image Processing (Intelligent Systems)
(5) Modeling
(6) Rendering
(7) Virtual Reality (HCI)
(8) Visualization

See the ACM/IEEE-CS Joint Task Force on Computing Curricula [2013] for specific topics and learning outcomes.