Abstract

Digital Content Creation (DCC) Applications (e.g. Blender, Autodesk 3ds Max) have long been used for the creation and editing of digital content (e.g. Images, videos). Due to current advancement in the field, the need for controlled automated work forced these applications to add support for scripting languages that gave power to artists without diving into many details. With time these languages developed into more mature languages and were used for more complex tasks (driving physics simulations, controlling particle systems, or even game engines). For long, these languages have been interpreted, embedded within the applications, lagging the UIs or incomparable with real programming languages (regarding Completeness, Expressiveness, Extensibility and Abstractions). In this paper, we present a high level scripting language (Zlang) and a DCC Engine that addresses those problems. The language can be
interpreted, compiled, extended in C/C++ and has a number of constructs, and optimizations dedicated to DCC domain. The engine provides geometric primitives, mesh modifiers, key-framed animation and Physics Simulations (Rigid Body, and Cloth Simulations). The engine is designed and implemented as a library so it can be used alone or embedded.

References

- W. T. Reeves, Particle systems a technique for modeling a class of fuzzy objects, ACM Trans. Graph. 2 (1983) 91-108.
- G. Stiny, Pictorial and Formal Aspects of Shape and Shape Grammars, BirkhauserVerlag, Basel, Switzerland, 1975.
- P. Muller, P. Wonka, S. Haegler, A. Ulmer, L. Van Gool, Procedural modeling of...
- J. M. Snyder, Generative modeling for computer graphics and CAD: symbolic shape
- R. Cartwright, V. Adzhiev, A. A. Pasko, Y. Goto, T. L. Kunii, Web-based shape
- B. Cutler, J. Dorsey, L. McMillan, M. Muller, R. Jagnow, A procedural approach to
- W. T. Reeves, E. F. Ostby, S. J. Leffler, The menv modelling and animation
253-262.
- L. Velho, K. Perlin, L. Ying, H. Biermann, Procedural shape synthesis on subdivision
146-153.
- F. K. Musgrave, C. E. Kolb, R. S. Mace, The synthesis and rendering of eroded
fractal terrains, in: Proceedings of the 16th annual conference on Computer graphics and
- R. Szeliski, D. Tonnesen, Surface modeling with oriented particle systems, SIGGRAPH
- T. Lewis, M. W. Jones, A system for the non-linear modelling of deformable procedural
- K. Perlin, A. Goldberg, Improv: a system for scripting interactive actors in virtual worlds,
in: Proceedings of the 23rd annual conference on Computer graphics and interactive
- K. Perlin, Real time responsive animation with personality, IEEE Transactions on
- C. Elliott, Modeling interactive 3d and multimedia animation with an embedded
language, in: Proceedings of the Conference on Domain-Specific Languages on Conference on
22-22.
341-367.
- K. Arnold, J. Gosling, The Java programming language (2nd ed.), ACM
- M. Mantyla, An introduction to solid modeling, Computer Science Press, Inc., New
- H. Bendels, D. W. Fellner, S. Havemann, Modellierung der grundlagen -
erweiterbaredatenstrukturen-zurmodellierung und visualisierungspolygonalerwelten, in: Modeling
- Virtual Worlds - Distributed Graphics, infix, 1995, pp. 149-158.

Index Terms

Computer Science Image Processing

Keywords

Three-Dimensional Graphics and Realism modeling Packages Methodology and Techniques Languages