Implementation for lindenmayer systemss

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July 20, 2020

1 Introduction

2 Lindenmayer systems

2.1 General idea

- Rewriting System (Objekte und Regeln die durch andere Objekte ersetzten)

2.2 Grammar

- Erklären von paralleler Erzeugung
- Unterscheidung zu Chomsky context free grammmar
- Aber hier Fokus auf DOL-System (deterministic)

2.3 Examples

- Koch
- ...

3 Architecture

- general focus on flexibility
- interfaces for future use cases
- different independent parts in the sample application

4 Build System

- Cmake as buildsystem
- reasons why cmake
- problems ?

5 FileHandler

- Load init data from file
- convinient way to configure the sample code
- no hard coded l system rules and axioms - use of the data in other apllications

6 LSystemHandler

- Suksessiver aufbau des L Systems
- Nutzung von beliebiger datenstruktur mit speziellen eigenschaften -> Semantische Schnittstelle
- Bekommt die Daten aus dem FileHandler, kann aber aus allem kommen - belieib in andere Sachen einbindbar

7 LSystem Datastructure

- Tree like sturcture
- save data not double only save pointers to the data
- provides access to the data with an iterator

8 Parser for the lsystem

- Parses the result of the l system
- calls the Turtle Graphic on the fly
- Problem for now -> not very flexible (perhaps for the future: provide which function to call for which object)

9 TurtleGraphic

9.1 Abstract class

9.2 TestTurtle

9.3 CairoTurtle

9.4 Further implementations

SVG implementation

10 Tests

11 Outlook

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[1] P. Prusinkiewicz and A. Lindenmayer, *The Algorithmic Beauty of Plants*. 2004. [Online]. Available: `http://algorithmicbotany.org/papers/abop/abop.pdf` (visited on 07/16/2020)