# Data structures of the intermediate representation

Origram

November 24, 2013

**Abstract**

Here is the description of the chosen data structures of the intermediate representation. First we give the external structures, i.e., those containing complementary informations about the diagram. Then, we give the internal structures, i.e., those describing how the types of our language are implemented.

## 1 External data structures

**Paper:** Information about the recommended type of paper

- *color_front* (structure with three fields R, G and B): color of the front side of the paper.
- *color_back* (structure with three fields R, G and B): color of the back side of the paper.
- *grammage* (int): grammage in $g.m^{-2}$.
- *type* (string): type of the paper.
- *size* (int): size of one edge of the paper in *cm*.
- *nb_edges* (int): number of edges (by default: 4)

**Diagram:** Information about the origami

- *author* (string): author.
- *title* (string): title.
- *comment* (string): comment about the origami.
- *ratio* (int): size of the final origami with respect to the initial size of the paper.
- *difficulty* (string): difficulty of the origami.
- *crease_pattern* (bool): Specifies whether or not we want to display the crease pattern on the diagram (by default: false).

## 2 Internal data structures

The internal data structures are yet to be defined precisely. Here are some first thoughts:

- point: given by its two coordinates (float) in the plane of the initial sheet of paper. Add its name ?
- line: given by its two extremities, and a polarity (valley, mountain). The polarity is given according to one arbitrary point of view chosen in the beginning (it can be different from the polarity indicated on the diagram, which is given with according to the current view !). Distinguish the marked folds from the virtual lines between two points ?

- list of points (in 2D).
- mapping 2D points $\rightarrow$ 3D points.
- mapping line $\rightarrow$ list of folds performed: in order to be able to backtrack easily.