![Bioprint logo]
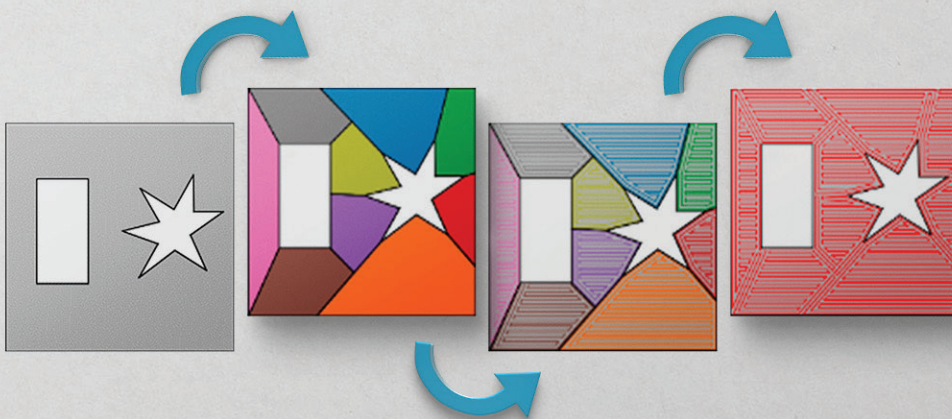
Bioprint

BIOPRINT is a multiplatform SDK focused on **geometrical processing and extrusion-based 3D printing trajectory generation for bioinspired models.** The objective of BIOPRINT is to provide **easy to use software tools** that would **optimize the 3D printing** results when using materials with low retraction properties (e.g., hydrogels) in printing surfaces used in the bio field.

Features

- Enable multi-material model generation

- Ease the generation of model geometry and material distribution

- Optimize the printing trajectory and path planning to minimize:

    - Extrusion interruptions

    - Material overlapping

Workflow for the generation of the continuous hybrid zig-zag pattern

powered by: **vicomtech**

Algorithms for

- Enable multi-material model generation

- Generation of the geometric specification of the trajectory to print contours and infill based on the printed thread thickness

- Trajectory optimization to reduce defects created by connection travel paths:

  - Strictly continuous hybrid zig-zag pattern generation

  - Path planning to minimize trajectory overlapping

- Multi-material model generation

Travel path   Printing path

Path planning result for the abdomen model

Normalized length of overlapping travel paths


Abdomen   Brain   Maxilar   Kidney   Biosensor
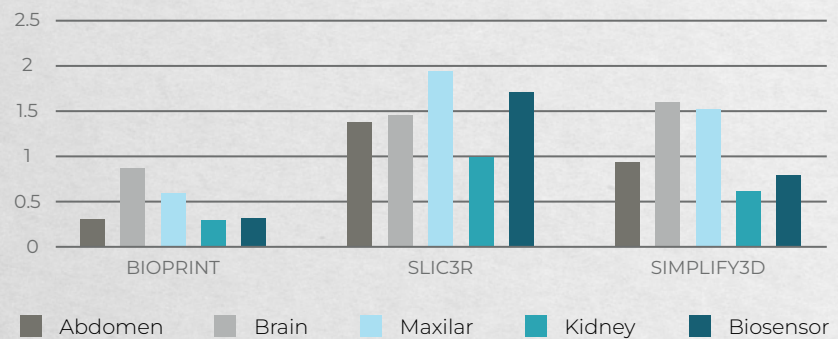
Overlapping travel paths result comparison with state of the art softwares

BIOPRINT is cross-platform and has been compiled and tested for Windows

Use cases

Application includes:

- Scaffold-based models

- Stacks of layers of different materials

- Nested structures of different materials

- Perimeter and infill with different materials
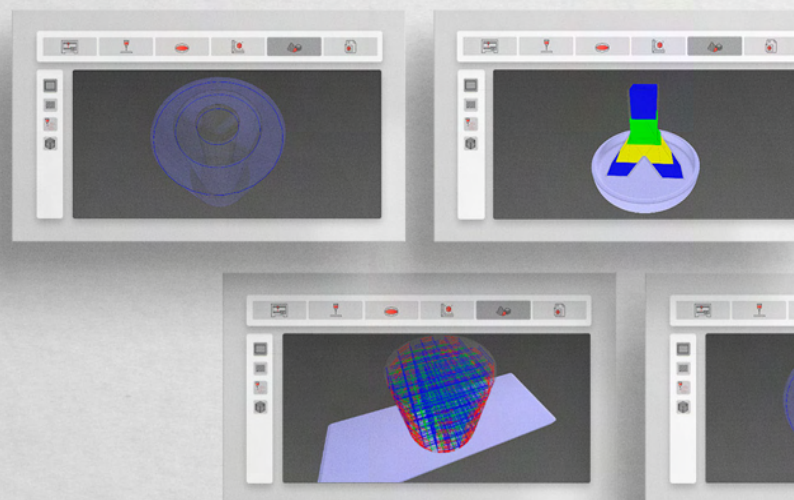
Programmatic generation of the multi-material models