

# constrained RDP algorithm

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Constrained simplification of arbitrary polylines in the context of arbitrary planar geometries.

## how to use

Open a terminal (command line) from the directory containing constdp[.exe]. Simplification options are made available through the use of a [TOML](#) file (config.toml). Execute `constdp` with the following command :

```
./constdp -c ./config.toml
```

If a `-c` option is not provided at the terminal e.g. `./constdp` , it assumes `./config.toml` as the default configuration file.

## config file

```
#input file is required
Input                  = "/path/to/input.[wkt]"
#output is optional, defaults to ./out.txt
Output                = ""
#this is optional
Constraints            = "/path/to/file.[wkt]"
#options : DP, SED
```

```
SimplificationType      = "DP"
Threshold               = 0.0
MinDist                 = 0.0
RelaxDist               = 0.0
#are polylines independent or a feature class ?
#if false planar and non-planar intersections
#between polylines are not observed
IsFeatureClass          = false
#observe planar self-intersection
PlanarSelf              = false
#observe non-planar self-intersection
NonPlanarSelf           = false
#avoid introducing new self-intersections as a
#result of simplification
AvoidNewSelfIntersects  = false
GeomRelation            = false
DistRelation            = false
SideRelation            = false
```

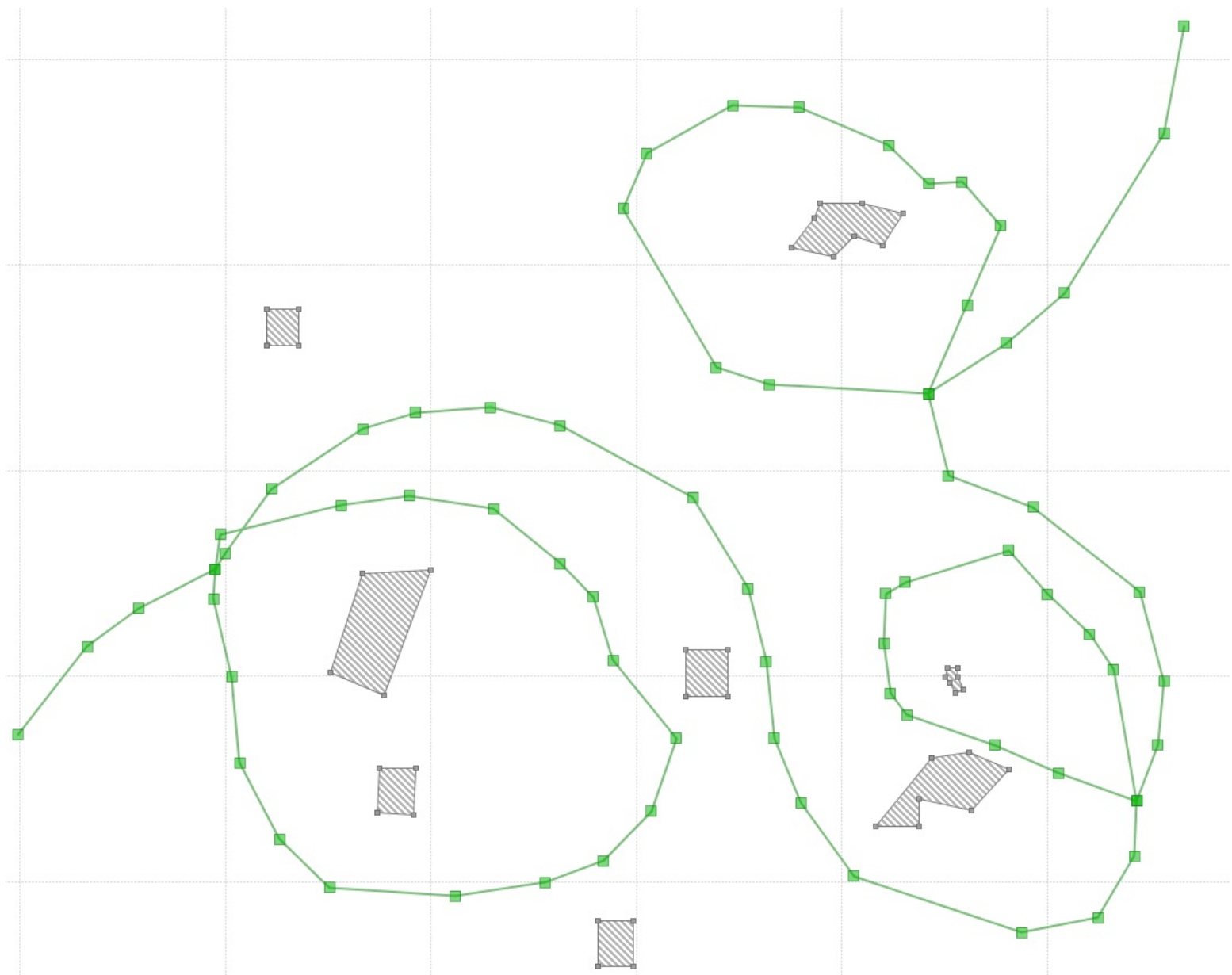
## example

Given a polyline in `resource/input.wkt`

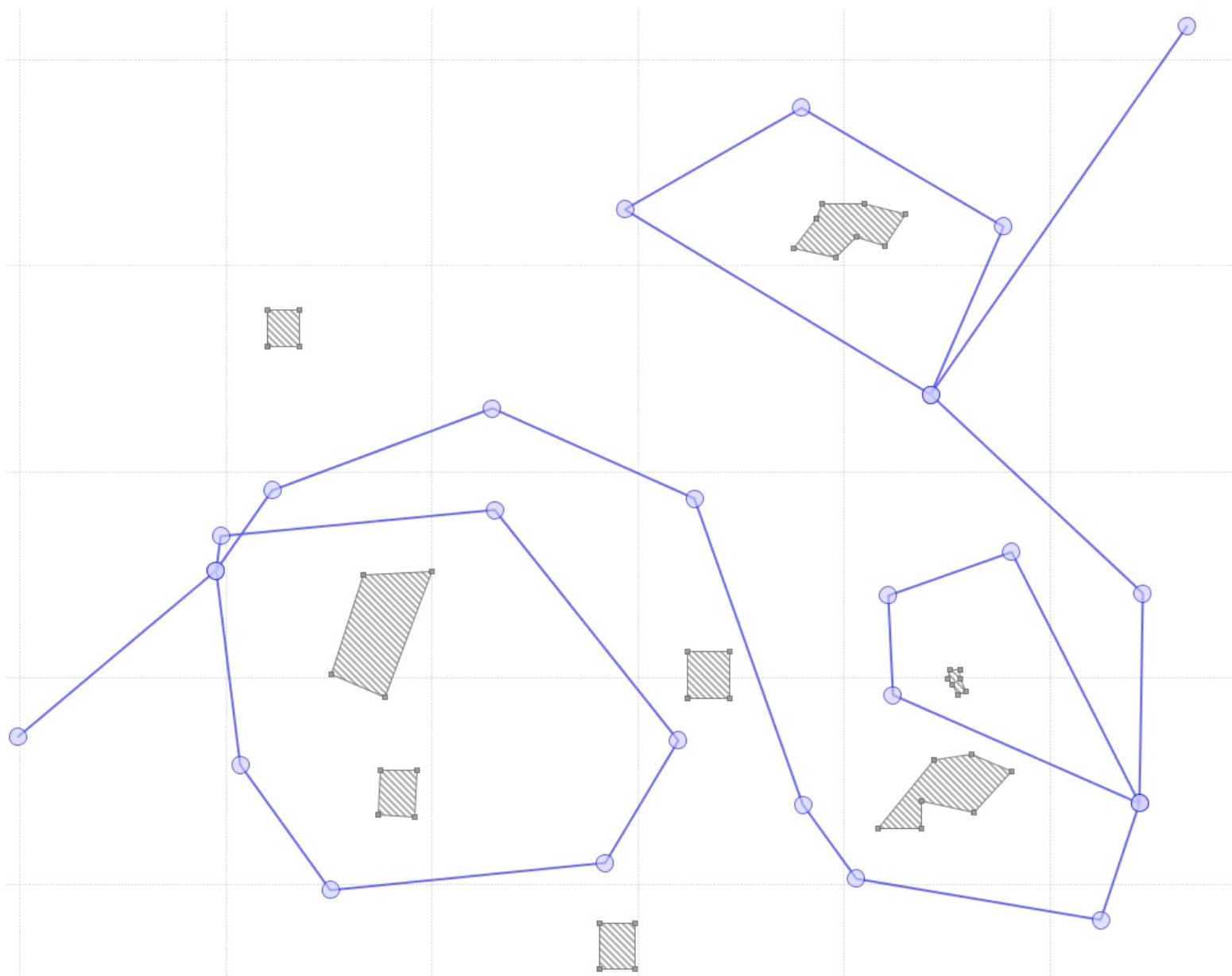
```
Input                   = "resource/input.wkt"
Output                  = ""
Constraints              = "resource/constraints.wkt"
SimplificationType      = "DP"
Threshold               = 50.0
MinDist                 = 20.0
```

```
RelaxDist          = 30.0
IsFeatureClass     = false
PlanarSelf         = true
NonPlanarSelf      = true
AvoidNewSelfIntersects = true
GeomRelation       = true
DistRelation       = true
SideRelation       = true
```

Original polyline in the context of planar objects:



Constrained simplification with respect to config options(above):



Unconstrained simplification with these options turned `false` :

```
IsFeatureClass      = false
PlanarSelf          = false
NonPlanarSelf       = false
AvoidNewSelfIntersects = false
```

```
GeomRelation      = false
DistRelation      = false
SideRelation      = false
```

