Civilizacije

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I. Uvod, malo o kodi, metodah

We want to estimate distribution of time that some civilisation survives in our galaxy.

All code is made in Python3.

We are generating data by different models ... Each model takes two more parameters: * **maxN** ... maximal number of civilisations in our galaxy. We assume that there is at least one civilisation (here we are) and at most 10 000 civilisations otherwise we would already see them. * **distribution** ... some parameters of the model are only bounded and we have to define distributions in this bounds. Possible distributions are: "loguniform", "uniform", "halfgauss", "lognormal", "fixed".

Models

* **Model 1:** The most elementary model using Sandberg distribution explained in ‘Sandberg-original-paper.pdf‘, * **Model 2:** We collect together some variables from first model so we have only two random variables, * **Model 3:** We add a possibility of spreading to other planets to first model.

Save collected data for further analysis

‘invalid-parameters.txt‘ is list of parameters that gave invalid input data (more than 5 % of probability grater than 10$\hat{}$15 years)

Moments are central mathematical moments. First moment is mean and second moment is variance. We can make histograms in linear or logarithmic scale.

Data comparison: Drawing of selected distributions

We can draw generated data using ‘plot3D_L.py‘ where we have to set scale (logarithmic scale or not) and models to draw.

Clustering of generated distributions

We can cluster al histograms in selected number of clusters using ‘cluster.py‘. It draws us some plots so we can understand generated data better. In cloud of points colored by model size of marker is equal to ‘log(maxN)‘.

* scale of *x* axis for histograms ‘logarithmic_scale‘ * list of numbers of clusters to make ‘ks‘ from 1 to 10 so it makes an analysis of data clustered ib each number of clusters from the list * ‘by_histograms‘ should be *True* to cluster by histogram space

II. Rezultati, opažanja, predvidevanja ob slikah, predlogi za naprej