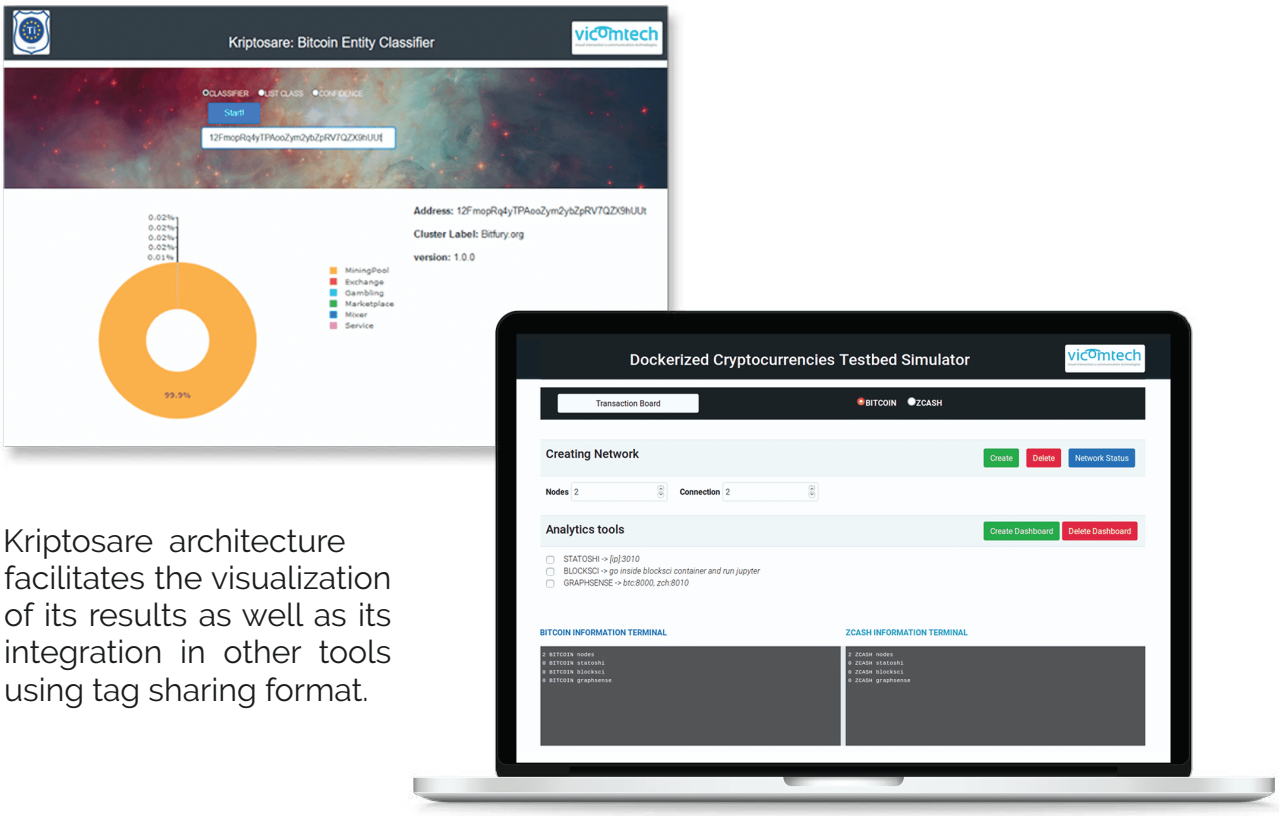
Kriptosare cybersecurity

# Machine Learning for crypto behaviours analysis

**Kriptosare** provides a set of tools for analysing the different behaviors adopted by users in cryptocurrency networks, like in Bitcoin, and it is able to simulate these known behaviors in a private environment (private blockchain).

## Applications

- Classify Bitcoin addresses
- Simulate real behaviors in a controlled environment
- Combine real and synthetic data for improving network knowledge
- Calculate confidence values for each known behavior




Kriptosare architecture facilitates the visualization of its results as well as its integration in other tools using tag sharing format.

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# Use cases

**Application includes:**

- Ilicit use of cryptocurrency
- Money Flow análisis
- Anomalous Behaviour detection
- Simulation of real transaction in controlled environmnet

# Architecture

Kriptosare is composed of two main actors: Kriptosare.gen and Kriptosare.class.

**Kriptosare.gen** is in charge of learning and replicating user behaviors in a private blockchain. This actor is in turn composed of four submodules, the Random Behaviour generator, Simulated Behaviour generator, the Testbed and the GUI, which help the user to control the whole system.

**Kriptosare.class** classifies different users behavior of the Bitcoin network using Machine Learning methods. This actor is composed of four sub-modules, the Behaviour trainer, the Behaviour Predictor and the REST-API which makes the prediction data available to be visualized in the last module, the Kripto-user interface (KGUI) or to be used by an external service.

| Actor | Module | Description | Dependencies | Platforms |
|---|---|---|---|---|
| Kriptosare.gen | Random Behaviour generator | generate random behavior (transactions) between users of the created network. | numpy | Docker engine 2.7.0 |
| | Simulated Behaviour generator | generate fixed behavior (transactions) between network users. With this it is the user who chooses the nodes involved in each transaction. | numpy | |
| | Testbed | It is the core of the generation that allows to deploy the containers and connects them between them | Bitcoin-core, rpc | |
| | GUI | Facilitate the management of Kriptosare.gen for the end user | Flask, bootstrap | |
| Kriptosare.class | Behaviour trainer | Collect Bitcoin data, train the machine learning model and export it | sklearn, pandas, cassandra | |
| | Behaviour predictor | test the model and save the ratings/predictions in the database. | sklearn, pandas, cassandra | |
| | REST-API | makes predictions accessible via a REST call | flask | |
| | KGUI | visualize the results of the rankings in a user-friendly way | Jquery, booststrap, plotly | |


## Contact Us

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