

# Internship proposal: Data Analysis in the network of transactions between actors in the Bitcoin blockchain

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The objective of this internship is to analyze and characterize the evolution of usages in the Bitcoin Cryptocurrency, by analyzing the content of its blockchain.

Bitcoin is the oldest and still most popular cryptocurrency. The objective of the **BITUNAM** research project<sup>1</sup> is to better understand activities of users of this digital currency, and the evolution of its usages.

In a first step, we have developed methods (e.g.,[2]) to identify *actors*(users,company, etc.) in the blockchain, i.e., multiple addresses belonging to the same *actor*.

The objective of this internship is to analyze the activity of these actors [1]. In particular, we would like to answer questions such as:

- What is the fraction of transactions involving exchange platforms, and how does it change along time?
- How do mining pool manage their gains, and how do they share it among their members?
- How are Bitcoin Faucets connected to other actors?
- How are gambling platform managed? What fraction of all transactions do they represent, and how does this change along time?

One of the main difficulty (and challenge!) of this project is the large size of the dataset to analyze, with hundreds of millions of transactions representing GigaBytes of textual data.

In practice, the intern will have to perform the following tasks:

1. Learn how to handle large quantity of data in an efficient way
2. Compute aggregated statistics about some actors activity
3. Actor graph/network analysis to characterize exchanges between actors and actors behaviors.

## References

- [1] Sarah Meiklejohn, Marjori Pomarole, Grant Jordan, Kirill Levchenko, Damon McCoy, Geoffrey M Voelker, and Stefan Savage. A fistful of bitcoins: characterizing payments among men with no names. In *Proceedings of the 2013 conference on Internet measurement conference*, pages 127–140, 2013.
- [2] Cazabet Remy, Baccour Rym, and Latapy Matthieu. Tracking bitcoin users activity using community detection on a network of weak signals. In *International conference on complex networks and their applications*, pages 166–177. Springer, 2017.

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<sup>1</sup><http://cazabetremy.fr/BITUNAM.html>