

## PhD Proposal

**Modeling and Systems-theory for the Disorders Of Online Media**Supervisors: **Paolo Frasca** ([web](#), [mail](#)), **Tommaso Venturini** ([web](#), [mail](#))

Duration: 3 years

Salary:  $\approx$  1800 euros per month after taxes**Key dates:**

- For full consideration, contact the supervisors as soon as possible and no later than **June 15**.
- End of June: Selection completed.
- September/October 2019: PhD studies begin.

**Context:** This work will be carried out in the context of the interdisciplinary project DOOM “Systems-theory for the **Disorders Of Online Media**” that is funded by CNRS within the framework of the [80|PRIME](#) initiative to mark CNRS’ 80<sup>th</sup> anniversary. The student will be enrolled in the EEATS doctoral school of Grenoble University with main research affiliation with the [GIPSA-lab](#) research center in Grenoble. To perform the desired interdisciplinary work, the student shall divide his/her time between GIPSA-lab and the [Center for Internet and Society](#) in Paris.

**Candidate profile:** Given the interdisciplinary nature of the position, we shall consider candidates that are committed to an interdisciplinary research and may have backgrounds ranging from Applied Mathematics and Control Systems to formal Political Science, Economics, quantitative Sociology.

**Topic description:**

Online social media have a key role in contemporary society and the debates that take place on them are known to shape political and societal trends. For this reason, pathological phenomena like the formation of “filter bubbles” and the viral propagation of “fake news” are observed with concern. The scientific assumption of this project is that these *information disorders* are direct consequences of the inherent nature of these communication media, and more specifically of the collective dynamics of attention thereby. In order to capture these dynamics, this project advocates the mathematical modelling of the interplay between the medium (algorithmic component) and the users (human component). The resulting dynamics shall be explored by a system-theoretic approach, using notions such as feedback and stability. This quantitative and rigorous approach is meant to not only unlock fundamental insights but also deliver suggestions on suitable policies to manage the media.

**Bibliography:**

W.S. Rossi, J.W. Polderman, and P. Frasca. The closed loop between opinion formation and personalised recommendations. Working Paper on [ArXiv](#), September 2018

T. Venturini. From Fake to Junk News, the Data Politics of Online Virality. In D. Bigo, E. Isin, & E. Ruppert (Eds.), *Data Politics: Worlds, Subjects, Rights*. London: Routledge, 2019,

[www.tommasoventurini.it/wp/wp-content/uploads/2018/10/Venturini\\_FromFakeToJunkNews.pdf](http://www.tommasoventurini.it/wp/wp-content/uploads/2018/10/Venturini_FromFakeToJunkNews.pdf)