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Master Thesis: Can Twitter Predict Publication Success

Scientific publication is at the center of various professions, especially for academics, but also for industry or government experts, successful publications form the foundation for job promotions and future research. Researchers are constantly trying to improve traditional metrics of research such as the number of publications (research output) or citation rates (research impact/ quality). Hence, an accurate understanding of the dynamics that make some scientific articles successful (where success can be defined by the number citations or the ranking of the journal in which the article is published) is of interest for academics and research organizations. Due to the increasing importance of altmetrics (capturing the online attention of scholarly content), scientists are more and more using online social media platforms such as Twitter or ResearchGate to distribute their research (Priem, 2013). Quantifying the actual benefit (in a traditional sense) to using social media for promoting scientific research, Peoples et al. (2016) find that Twitter activity is significantly and positively associated with the number of future citations. However, most academic institutions consider the ranking of the journals in which the applicants published for their tendering process. Therefore, an understanding of the relationship between social media attention and the success of a research article based on the ranking of the journal is an important step toward completing our understanding of the true societal impact of scientific research. Put differently, this project aims to answer the question how social media activity associated with scientific journal articles translates into publication success?

The goal of this master thesis is to design, implement and evaluate a statistical (or machine learning) model to analyze the relation of social media activity and the publication success in form of journal relevance and citations. First, the student is expected to give a comprehensive and structured literature overview about the relation of social media and scientific publications. Second, data such as the Google search volume, SSRN meta data, and Twitter mentions need to be collected by the student with active support by the supervisor (all necessary scrapers will be provided). Third, the acquired data set will be analyzed by the student applying a suitable empirical method (e.g. statistical

or machine learning models) to predict publication success. The student is expected to have strong interest in programming and empirical modeling as well as dealing with large amounts of data.

Supervisor: Micha Bender & Benjamin Clapham

Relevant Literature:

- Eysenbach, G. (2011). Can tweets predict citations? Metrics of social impact based on Twitter and correlation with traditional metrics of scientific impact. *Journal of medical Internet research*, 13(4), e123.
- Laurance, W. F., Useche, D. C., Laurance, S. G., & Bradshaw, C. J. (2013). Predicting publication success for biologists. *BioScience*, 63(10), 817-823.
- Peoples, B. K., Midway, S. R., Sackett, D., Lynch, A., & Cooney, P. B. (2016). Twitter predicts citation rates of ecological research. *PloS one*, 11(11)
- Priem, J. (2013). Beyond the paper. *Nature*, 495(7442):437–40.
- Thelwall, M., Haustein, S., Larivière, V., & Sugimoto, C. R. (2013). Do altmetrics work? Twitter and ten other social web services. *PloS one*, 8(5).