Incorporating Intangible Information for Assessment Optimisation

Progress report 2018 - Scientific Excellence Working Group
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This document describes the idea which was initiated and discussed at the GYA 2017 AGM within the "Scientific Excellence" Working Group and preliminary implemented in 2018. We designed a short questionnaire to be filled out during the member selection process 2018 by the selection committee members. We collected the questionnaires and performed a preliminary analysis (see results 1). Furthermore, we prepared an anonymous relational database of the 2018 applicants and the reviewers with the gender, nationality, and discipline attributes. We did few overall preliminary analysis (see results 2 and 3), and planning to perform further analysis using the 2018 and 2019 applications. We ultimately aim to initiate a new project for identifying novel factors which reflect the implicit personal qualities of a person which are yet vital professionally.

Background

Curriculum Vitae (CV) are currently, if not the only, surely the most important document used to measure someone's professional excellency and to appraise their accomplishments. The information stated on CVs usually only reflects tangible skills and achievements which can conveniently be listed by quantitative indicators while subtle personal abilities and implicit achievements are often overlooked. CVs in different disciplines vary widely and there are different standards and formats. Based on the discipline the importance of different types of outputs varies; e.g. journals papers vs. conference proceedings, citation and impact factors. This variation in CVs is something to be studied in more detail and should be connected to the specificities of each field.

Currently the evaluation of scientific excellence of a person is more and more performed by looking at a few numerical results, such as the h-index, the Impact Factor, and the number of publications. Currently, there is some obsession with quantitative success indicators, even if there is a growing discussion on the appropriate and inappropriate use of Scientometrics. Nevertheless, the point we want to make here is different. We question the idea that in order to assess scientific excellence, one only has to look at the end result, which is then measured by the typical quantitative metrics. In contrast, we want to propose that the processes and context of doing science, and especially the path that led to the end result that we find reflected on a CV, matter much more.

The path that one has come through and the challenges that one has overcome are vital factors in shaping abilities that can be of great value in a professional context. These abilities can by no means be acquired solely through education and training, and they should in some way be reflected on CVs. Engagement, commitment, and adaptability are a few of many such qualities which one obtains through life

experiences. The challenges faced throughout a path are what give a different value to scientists who arrive at the same destination.

Through this project we aim to find complementary criteria by which these critical yet implicit qualities and experiences can be measured or reflected in the evaluation process. We believe that next to the conventional evaluation factors, other experiences and backgrounds should be taken into consideration in order to have a correct overview and understanding of one's abilities and potentials. Our plan is to approach this problem at different stages and from different angles.

Preliminary Results

1. The results showed that when evaluating an applicant, the academic excellence of the applicant, the "indexes" (i.e. h-index, i10-index, etc), and the affiliated "institute" had great impact on the decision of the reviewers (i.e. the selection committee members), in contrast being the "first author" or number of publications had the lowest impact. For non-academic excellence "creation of spin-off and "number of patents" were significantly the most influential factors, while number of "different countries" and the "challenges" faced by the applicant had very little to no impact. And for influential factors in Service, "previous engagements" and "collaboration with other sectors" were on top of the evaluators' list. Overall inconsistency over the influential factors for academic excellence was higher than the other two, and the reviewers were mainly scientists and academicians. This requires further analysis, corrections and normalization.

2. The results showed that there was a weak negative relationship between gender match/mismatch (of both reviewer and applicant) and the given score. If reviewer and applicant are both female it may result in a slightly better score than being of different gender, and if both are male, it may lead to a worse result than average. Female reviewers also give a better score than male ones. Male applicants generally get a slightly worse score than female applicants, especially if reviewer is also male.

3. The novel method of distribution of applicants to the selection committee 2018, diminished the potential gender, discipline, and nationality biased, and secured a fair and robust evaluation. Same algorithm for distribution of applicants among the selection committee 2019 were applied.

Next steps

We are expecting to wrap up this project in 2019 and discuss the outcomes with the membership in AGM 2020. We are planning to

1. Add the applications and the 2019 reviewers to the anonymous relational database,
2. Run complementary analysis on 2018 and 2019 applications
3. Apply machine learning models for text analysis and information retrieval from the CVs contents for extracting more advanced and informative components,
4. Set a workshop to discuss the results and to draft a white paper.