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# TunSci: Semi-automated Google Scholar based h-index ranking for Tunisian scientists

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**Abstract:** To highlight the Tunisian researchers working in Tunisia and abroad who are the most performant in scientific research and following many requests from several Tunisian researchers and institutions, I define in this work a Semi-automated Google Scholar based h-index ranking for Tunisian scientists. This ranking can be updated in real time thanks to an Excel file that is linked to the public Google Scholar profiles of Tunisian scientists available online using Microsoft .NET Framework.

**Keywords:** h-index, Tunisian scientists, Scientometrics, Ranking

## Introduction and Methods:

To continue my efforts to assess the quality and the quantity of scientific research in Tunisia and the research outputs of Tunisian researchers (Turki & Turki, 2014; Turki, 2015; Turki & Turki, 2015; Turki, 2016),

Following the requests of several scientists from the University of Carthage and the University of Sfax like Dr. Essebti Dhahri et Mr. Saddam Gafsi and the support of several members of the Tunisian Association for the Development of Research and Innovation (ADRI), of the Tunisian Agency of the promotion of Scientific Research (ANPR), and of the Tunisian Association for the Advancement of Science, Technology, and Innovation (TAASTI),

To give to interested people a list of the Tunisian scientists who have an efficient lifelong scientific research productivity, who had influenced the worldwide scientific community, and who consequently should be considered by the aspiring Tunisian researchers as their influencers,

To motivate the most performant Tunisian scientists to work more efficiently,

I decided to create a semi-automated Google Scholar based h-index ranking for Tunisian scientists entitled TunSci. Defined in (Hirsch, 2005), the h-index is the best scientometric index that can assess if the lifelong productivity of a scientist is efficient and make significant contribution to science or not because this index takes into consideration when calculated the quantity (Number of research items) and the scientific effect (Number of citations for each item) of the research output of the scientist. In fact, the h-index is simply defined as  $h$  such that  $h$  of the publications of the scientist have each  $h$  citations or more and such that the other publications of that scientist have each  $h$  citations or less (Bornmann & Daniel, 2009).

This ranking is done using an Excel file that retrieve the h-indices of the Tunisian scientists from their public Google Scholar profiles available online using Microsoft .NET Framework. So, scientists without a public Google Scholar profile are not ranked. Furthermore, if a Tunisian scientist has more than one public Google Scholar profile (Every scientist should have a unique Google Scholar profile) or if his profile is manipulated (contains a highly cited research item that is not written by the scientist), he is eliminated from the ranking.

## Results:

- The TunSci ranking is obtained as an XLSX file (It can be found in <https://sites.google.com/site/houcemeddineturki/tunsci-ranking>). This file contains :
  - « TunSci\_Local » Sheet where there is a ranking of Tunisian scientists working in Tunisia
  - « TunSci\_Expatriate » Sheet where there is a ranking of Tunisian scientists working abroad.
  - Other sheets that retrieve scientometric data from public Google Scholar profiles using Microsoft .NET Framework
  - Each of the two ranking sheets (TunSci\_Local and TunSci\_Expatriate) shows the affiliation and the specialization of each of the ranked scientists. The specialization of the scientist is shown as an « X » in :
    - Group A, if the scientist work about Mathematics, Computer Science, or Engineering
      - A1: Computer Science and Automation
      - A2: Telecommunications
      - A3: Mathematics
      - A4: Electrical Engineering
      - A5: Operational Science and other aspects of Engineering like Mechanical Engineering and Chemical Engineering
    - Group B, if the scientist work about Social Sciences, Arts, or Humanities
    - Group C, if the scientist work about Chemistry or Materials Science
    - Group D, if the scientist work about Physics or Astronomy
    - Group E, if the scientist work about Medicine, Pharmacology, Biology, Animal Science, Plant Science, Forestry, Dentistry, or Environmental Science
      - E1: Linked to humans
      - E2: Linked to botany, plants, or forestry
      - E3: Linked to animals
      - E4: Sport Science
      - E5: Environmental Science and general or other aspects of biological sciences like Food Science and Biotechnology
    - Group F, if the scientist work about Geology, Hydrology, or Soil Science
    - Group G, if the scientist work about Economics, Management, Finance, Marketing, Banking, Accounting, Commerce, or Business

I showed the specialization of each scientist as the h-index is biased (generally returns higher values for the biomedical scientists) and consequently cannot be used to compare scientists from significantly different disciplines (Iglesias & Pecharromás, 2007).
  - If two scientist or more have the same h-index, they are ranked according to their number of citations
- As this ranking only shows highly performant Tunisian scientists, I only consider Local scientists with an h-index of 20 or more and Expatriate scientists with an h-index of 30 or more. Scientists below this standard are not recognized in this ranking.

#### Notes:

- If the affiliation or the specialization of a scientist is outdated, please contact me at [turkiabdelwaheb@hotmail.fr](mailto:turkiabdelwaheb@hotmail.fr) and I will adjust the XLSX file so that this scientist can be ranked.
- If a scientist is not ranked and meets to the standards, he needs to create his public Google Scholar profile as explained by Sarah Goodlier in [https://www.slideshare.net/SarahG\\_SS/how-to-set-up-your-google-scholar-profile-google-scholar-citations](https://www.slideshare.net/SarahG_SS/how-to-set-up-your-google-scholar-profile-google-scholar-citations). Then, he can contact me at [turkiabdelwaheb@hotmail.fr](mailto:turkiabdelwaheb@hotmail.fr) and I will adjust the XLSX file so that he can be added to the ranking.

- If a user would like to update the standings of the rankings in real time, he can open the XLSX file using Microsoft Office Excel (2007 edition or better). Then, he can refresh the scientometric data of the ranked Tunisian scientists by clicking on « Data > Connections » and then on « Refresh all ». This can take time. After that, he can update the rankings for each of the two sheets (TunSci\_Local and TunSci\_Expatriate) by clicking on « Home » tab and then on « Sort and Filter ». The user should choose to rank the scientists for each of the rankings according to their h-indices and then according to their number of citations to have the accurate standings of Tunisian scientists.

#### **Future directions:**

Future directions of this research work can be the creation of TunSci-like rankings that classify Tunisian scientists according to the other scientometric data provided by the public Google Scholar profile like the h5-index (showing the current scientific effect of the scientist) or the all-time i10-index (showing whether the best cited research items of the scientist are highly recognized citation classics or not).

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