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# RANK OF HUNGARIAN RESEARCHERS BORN IN VOJVODINA IN NATURAL SCIENCES, TECHNIQUES AND HUMAN SCIENCES

**Abstract**. Using the *h*-index and the total number of citations in natural sciences, techniques and human sciences in this paper the best 10 Hungarian researchers born in Vojvodina are ranked. The list may be formed based on the *h*-index and the total number of citations, given in WOS-a (Web of Science), Scopus, Publish or Perish Program and Google Scholar. The data for 340 Hungarian researches that were born in Vojvodina were processed. Data for the first 10 researches with *h*-index>10 were presented. Among different sources for calculating *h*-index Google Scholar is the most complete. Therefore, to define a single indicator, *h*-index calculated by Google Scholar may be a good and simple one. The author chooses the Google Scholar database as it is the widest one.

**Keywords**. *h*-index, total number of citations, Hungarian researchers born in Vojvodina, ranking, WOS, SCOPUS, Publish or Perish, Google Scholar.

## 1. Introduction

Due to the requests in a variety of activities (for example, who will be proposed as a project leader) ranking researches in different disciplines of science become very important in last decade. Ranking is possible on different criteria: number of published papers, books, number of citations, number of citations in journals from Thompson's SCI lists or Scopus, etc.

One of these measures is *h*-index which includes both the productivity and citation impact of the publications of a scientist. The index was suggested in 2005 by Jorge E. Hirsch [1]. "A scientist has index *h* if *h* of his/her Np papers have at least h citations each, and the other (Np-h) papers have no more than *h* citations each." Variation of this method also can be applied to rank group of scientists as well as some department or university or even country. *H*-index can be determined according to the different sources:

- WOS (Web of Science),
- Scopus,
- Publish or Perish Program
- Google Scholar.

Ranking position highly depends on the source used; consequence is that depending on the needs different sources should be used.

In this paper the list of the 10 best researchers of Hungarian nationality born in Vojvodina is presented. List covers researches from natural sciences, techniques and human sciences. As a primary source Google Scholar [2] has been used. The author chooses the Google Scholar database as it is the widest (see Table 1) and covers not only scientific publication but also other material related to education and publishing non-research papers (for example educational books, textbooks, etc.). Introduced by Google in 2004, Google Scholar has become a very popular alternative data source.

Google Scholar is the most complete. Therefore, to define a single indicator, *h*-index calculated by Google Scholar may be a good and simple one.

| Discipline | Scopus citations as % of Google Scholar citations | Web of Science citations as % of Google Scholar citations |
|---|---|---|
| Humanities | 11.5 % | 7.0 % |
| Social Sciences | 30 % | 22.7 % |
| Engineering | 57.6 % | 45.7 % |
| Sciences | 64.2 % | 65.6 % |
| Life Sciences | 70.5 % | 66.8 % |

Table 1. Rate of citations in Scopus and Web of Science according to Google Scholar ones.

Ranking is possible to be based on *h*-index (primary) and total number of citations. The data for 340 Hungarian nationality researches born in Vojvodina were processed and first 10 researches with *h*-index>10 were presented.

## 2. Ranking list of Hungarian nationality researchers born in Vojvodina

List of 10 best Hungarian nationality researches born in Vojvodina can be constructed based on different sources. In Table 1, Table 2, Table 3 and Table 4 comparative overview is presented based on SCOPUS [3], Web of Science [4] and Google Scholar data sources. The primary conditions for ranking are the *h*-index and the total citation number of the publications. It is evident that ranking is different, although some names exist in all lists (and even on the same rank). In the lists researches were ranked according *h*-index in decreasing order as a first criterion and then by the total number of citations.

| No. | Researchers | *h*-index | Citations |
|---|---|---|---|
| 1. | Endre Suli | 30 | 2551 |
| 2. | Laszlo Huber | 25 | 2757 |
| 3. | Endre Pap | 25 | 1942 |
| 4. | Livija Cveticanin | 19 | 1242 |
| 5. | Vilmos Simon | 19 | 839 |
| 6. | Istvan Bikit | 14 | 682 |
| 7. | Rudolf Kastori | 11 | 554 |
| 8. | Bela Ribar | 11 | 409 |
| 9. | Gyula Mester | 8 | 124 |
| 10. | Janos Simon | 3 | 18 |

Table 2. *H*-index and number of citations for Scopus

| No. | Researchers | *h*-index | Citations |
|---|---|---|---|
| 1. | Endre Pap | 29 | 3162 |
| 2. | Endre Suli | 29 | 2398 |
| 3. | Livija Cveticanin | 17 | 983 |
| 4. | Laszlo Huber | 14 | 1452 |
| 5. | Istvan Bikit | 12 | 516 |

| | | | |
|---|---|---|---|
| 6. | Rudolf Kastori | 12 | 464 |
| 7. | Vilmos Simon | 12 | 388 |
| 8. | Bela Ribar | 3 | 61 |
| 9. | Gyula Mester | 6 | 124 |
| 10. | Janos Simon | 2 | 10 |

Table 3. *H*-index and number of citations for Web of Science

| No. | Researchers | *h*-index | Citations |
|---|---|---|---|
| 1. | Endre Suli | 45 | 7435 |
| 2. | Endre Pap | 38 | 10323 |
| 3. | Laszlo Huber | 28 | 4375 |
| 4. | Livija Cveticanin | 24 | 1918 |
| 5. | Vilmos Simon | 23 | 1266 |
| 6. | Gyula Mester | 21 | 845 |
| 7. | Rudolf Kastori | 20 | 1606 |
| 8. | Istvan Bikit | 16 | 959 |
| 9. | Miklos Biro | 14 | 593 |
| 10. | Simon Janos | 12 | 247 |

Table 4. *H*-index and number of citations for Google Scholar

Although in purely scientific community ranking by SCOPUS or WOS more is often than by Google Scholar, author decide to make primary ranking according Google Scholar because this raking better reflects not only scientific but also educational work not related only to publishing activity in SCI journals. In the rest of the text detail information about researches on the list based on Google Scholar are presented. Based on the data of Google Scholar the list of the 10 best Hungarian nationality researches born in Vojvodina is given in Figures 1-10. The primary conditions for ranking are the *h*-index and the total citation number of the publications. Researches ranked first by *h*-index in decreasing order and then by the total number of citations.

**1.**

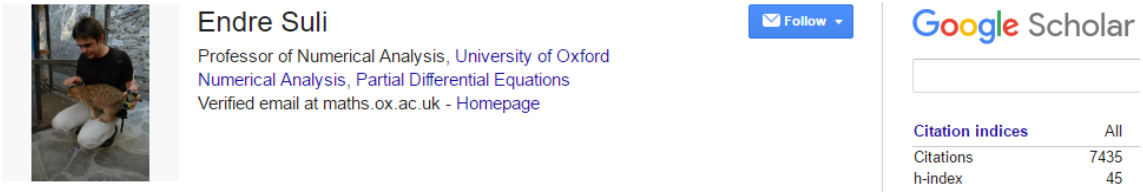


Figure 1: **Endre Suli**, *h*-index = 45, citations: 7435, [5]

**2.**

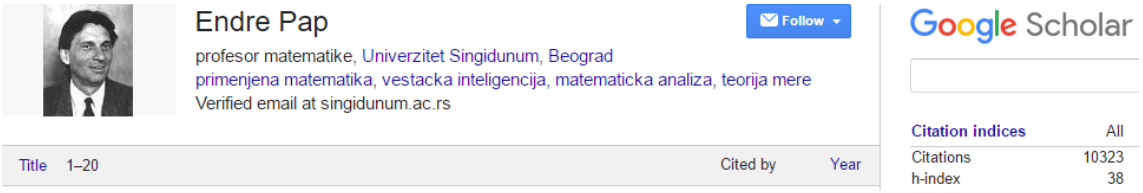


Figure 2: **Endre Pap**, *h-index* = 38, citations: 10323, [6]

**3.**

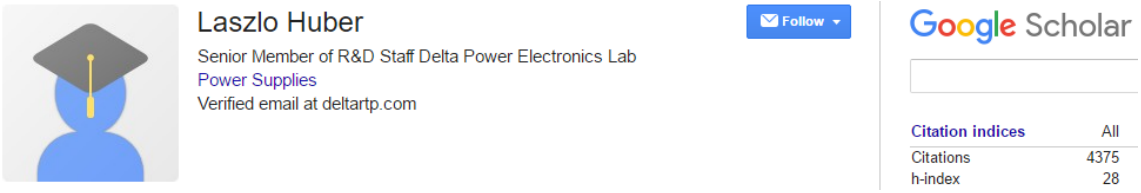


Figure 3: **Laszlo Huber**, *h*-index = 28, citations: 4375, [7]

**4.**

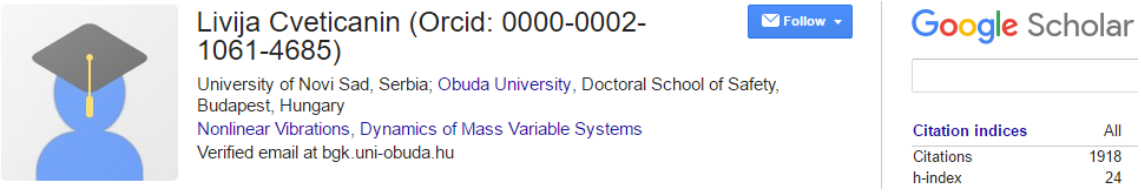


Figure 4 **Livija Cveticanin**, *h*-index = 24, citations: 1918, [8-11]

**5.**

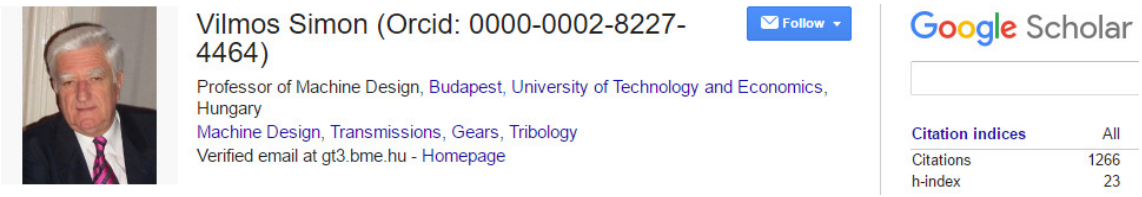


Figure 5: **Vilmos Simon**, *h*-index = 23, citations: 1266, [12]

**6.**

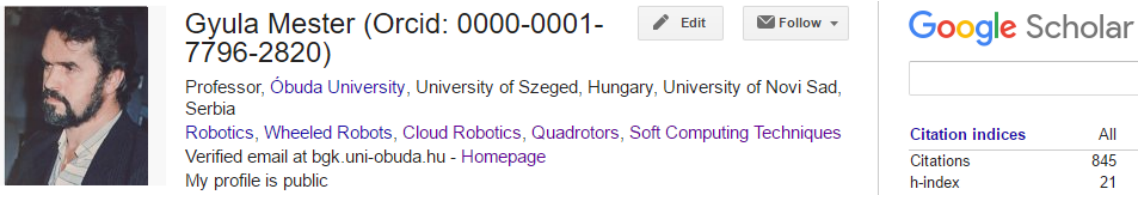


Figure 6: **Gyula Mester**, *h*-index = 21, citations: 845, [13-24]

**7.**

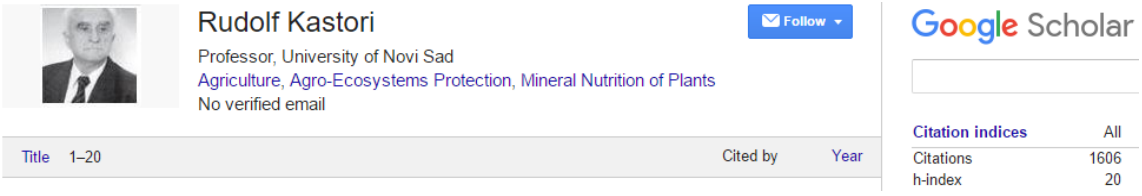


Figure 7: **Rudolf Kastori**, *h*-index = 20, citations: 1606, [25]

**8.**

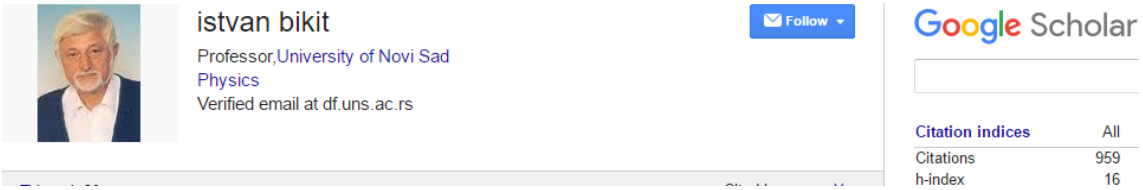


Figure 8: **Istvan Bikit**, *h*-index = 16, citations: 959, [26]

**9.**

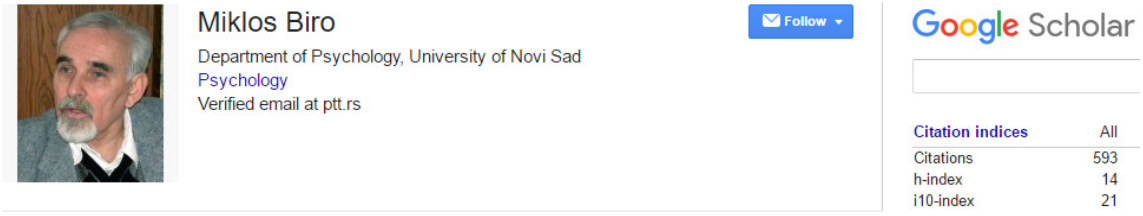


Figure 9: **Miklos Biro**, *h*-index = 14, citations: 593, [27]

**10.**

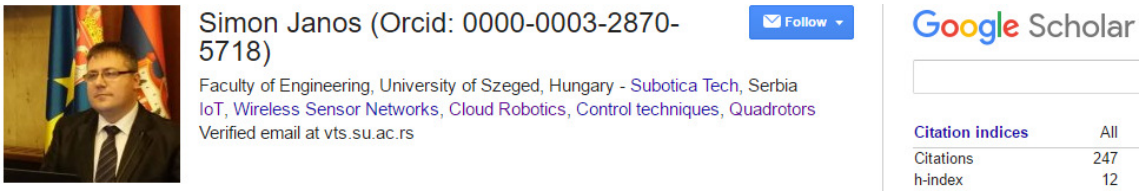


Figure 10: **Simon Janos**, *h*-index = 12, citations: 247, [28-32]

## 3. Conclusion

List of best 10 reseaches in natural sciences, techniques and human sciences of Hungarian nationality born in Vojvodina is presented. The ranking is made based primary on *h*-index and total citation number based on the database in Google Scholar. Researches ranked first by *h*-index in decreasing order and then by the total number of citations. Such list is important not only for local Hungarian community in Serbia but also, because many people from the list are leaving abroad, for all Serbian scientists as source for possible collaboration in science and education. Presented work shows that ranking can be produced with relatively little effort. Having in mind its potential positive effects we believe that these and similar ranking in both the narrower and the broader scientific areas should be encouraged. Of particular interest might be the ranking of institutions in a similar or the same manner.

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