

<b>Masaryk University</b>	
<b>Faculty</b>	Faculty of Informatics
<b>Procedure field</b>	Informatics
<b>Applicant</b>	Vít Nováček
<b>Applicant's home unit, institution</b>	Faculty of Informatics, Masaryk University
<b>Habilitation thesis</b>	A Journey in Biomedical Discovery Informatics: From Ontology Learning to Knowledge Graph Embeddings
<b><u>Board members</u></b>	
<b>Chair</b>	prof. RNDr. Michal Kozubek, Ph.D. <i>Faculty of Informatics, Masaryk University</i>
<b>Members</b>	doc. Ing. Radek Burget, Ph.D. <i>FIT VUT v Brně</i> Assoc. Prof. Robert Hoehndorf, PhD <i>KAUST, Saudi Arabia</i> doc. RNDr. Lubomír Popelínský, Ph.D. <i>Faculty of Informatics, Masaryk University</i> prof. Ing. Filip Železný, Ph.D. <i>FEL ČVUT v Praze</i>

### Evaluation of the applicant's scholarly/artistic qualifications

After finishing his PhD in 2011 at the National University of Ireland Galway, the candidate has been an active researcher and continued to attend to the application of computer science in biomedicine. His recent research has mainly been focused on biomedical applications of AI. He has visited and still collaborates with a number of groups worldwide and often publishes with foreign co-authors.

According to the submitted habilitation materials, he has authored or co-authored 8 original research articles, 2 book chapters and 26 articles in conference proceedings. He has published as the main author in top-tier (Q1) journals like PLoS Computational Biology, Journal of Web Semantics and Journal of Biomedical Informatics. The number of citations (as of October 2021) was 105 in WoS (99 without self-citations) and 510 on Google Scholar. The number of citations per year has a growing tendency. The candidate has also authored or co-authored 6 patent applications (3 pending and 3 granted) and 5 successful research project proposals (out of them 3 as PI). He has been involved in the organization of 9 international conferences.

In comparison to the minimal criteria set by the Faculty of Informatics of Masaryk University (15 papers in international databases, 5 high-quality papers and 40 citations without self-citations), it can be concluded that the candidate surely exceeds the required values by a wide margin.

**Conclusion:** The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Informatics.

### Evaluation of the applicant's pedagogical experience

The candidate has taught at the Faculty of Informatics as a student in Spring 2003 and Spring 2004 (C language labs) and then after his return back from Ireland since Autumn 2020 (4 semesters until now including Spring 2022, AI-related courses including lectures). He has also taught at the National University of Ireland Galway for 1 semester in 2011. This yields 7 semesters of teaching in total, which is just above the threshold of minimal requirements (3 years, i.e. 6 semesters).

He has not only taught but also prepared courses: in 2011, he prepared new study and course materials in Ireland from scratch (CS102), and recently he collaborated on restructuring a course (PA164) and introduced new parts into another course (IV121) at the Faculty of Informatics of Masaryk University. He has also served as lab coordinator (PB016).

He has supervised 5 Bachelor's theses (1 defended and 4 in progress), 4 Master's thesis (3 defended and 1 in progress) and 2 PhD theses (both defended). These numbers are lower than the average of other applicants at the same faculty but correlate with the short duration of teaching stated above.

The candidate prepared 7 teaching aids for various courses (especially e-learning materials), 2 popular science texts, and 8 educational presentations (workshops or tutorials).

He has worked as an examiner in state examination boards (Bachelor and Master levels) and doctoral boards both in Ireland (2015-2020) and at the Faculty of Informatics of Masaryk University (2008, 2010, 2021-now).

**Conclusion:** The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Informatics.

### Habilitation thesis evaluation

The habilitation thesis is entitled "A Journey in Biomedical Discovery Informatics: From Ontology Learning to Knowledge Graph Embeddings" and consists of three parts: context (overall concept, related work, specific contributions, and impact), ontology learning (based on three published papers) and knowledge graph embeddings (based on six published papers). The thesis shows the evolution of candidate's research over the last 13 years exploring various applied AI approaches to specific problems related to biomedicine.

Three external reviewers were appointed by the habilitation committee. All of them agree that the applicant fulfils the requirements expected of a habilitation thesis in the field of Informatics. Their major observations and conclusions are as follows.

**Prof. Paul Schofield (University of Cambridge, UK)**

"Dr Novacek has submitted a series of thematically linked papers; six primary research papers in peer reviewed journals, one review and two papers in conference proceedings. All of the published papers are collaborations with other investigators, some of these in industry and it is very clear that Dr Novacek is the prime or joint prime investigator on these papers. It is possible to see though time his establishing of his own independence and developing his own individual contribution to the discipline. Overall this set of papers represents the scientific development of a capable and creative informatician and contains several major contributions to the field, particularly paper 8. My assessment is that this would certainly be a profile appropriate for a tenure decision in the UK or the US Universities with which I am familiar. I can only compare the standard with these as we have no equivalent of the habilitation here."

**Prof. Stefan Schulz (Medical University of Graz, Austria)**

"The habilitation thesis presented by Vít Nováček encompasses about 14 years of academic work centred on topics on computational semantics using symbolic, probabilistic and neural approaches, with a focus on life science. The habilitation is cumulative and includes nine original publications, preceded by an introduction in which the term "Biomedical Discovery Informatics" is presented as the motto of his research activities. All these papers were peer-reviewed and appeared in proceedings of renowned conferences and journals with good impact factors for the domain. In each of these works Vít Nováček demonstrates deep domain knowledge, a good command of research methodology and good publication skills."

**Dr. Ernesto Jiménez-Ruiz (City, University of London, UK)**

"Dr. Nováček has more than 10 years of postdoctoral experience in top-tier international institutions showing high quality research and leadership. He has conducted research within the intersection of the Semantic Web and biomedical AI applications. His research was not only excellent from the AI perspective, but also from the biomedical domain. Dr. Nováček showed an impressive understanding of the domain and communication skills with domain experts to make a principled application of the AI techniques within biomedicine. Taking into account the habilitation criteria, he has a number of publications in top-tier conferences and journals like PLoS Computational Biology, Web Semantics, ECML/PKDD and ISWC. That exceeds the minimum criteria for Habilitation getting closer to the requirements for a Professor Appointment. According to Google scholar he has 576 citations with a growing tendency, showing the positive impact of the conducted research."

**Conclusion:** The applicant's habilitation thesis meet the requirements expected of habilitation theses in the field of Informatics.

**Secret vote results**

Voting took place: electronically

Number of board members		5
Number of votes cast		5
of which	in favour	5
	against	0

**Board decision**

Based on the outcome of the secret vote and following an evaluation of the applicant's scholarly or artistic qualifications, pedagogical experience and habilitation thesis, the board hereby submits a proposal to the Scientific Board of the Faculty of Informatics of Masaryk University to **appoint the applicant associate professor** of Informatics.

In Brno on 12.05.2022

prof. RNDr. Michal Kozubek, Ph.D.

