

Masaryk University	
Faculty	Faculty of Informatics
Procedure field	Informatics
Applicant	doc. Ing. Pavel Čeleda, Ph.D.
Applicant's home unit, institution	Faculty of Informatics, Masaryk University
Board members	
Chair	prof. RNDr. Michal Kozubek, Ph.D. <i>Faculty of Informatics, Masaryk University</i>
Members	prof. RNDr. Jan Strejček, Ph.D. <i>Faculty of Informatics, Masaryk University</i> prof. Ing. Petr Tůma, Dr. <i>MFF UK v Praze</i> doc. Ing. Lukáš Malina, Ph.D. <i>FEKT VUT</i> Prof. Christian Rossow <i>Helmholtz Center for Information Security (CISPA), Saarland University and TU Dortmund</i>

Evaluation of the applicant's scholarly/artistic qualifications

The candidate graduated from the Military Academy in Brno in 2002 and continued his doctoral studies at the University of Defence, Brno (2002-2007) with an 8-month stay at ENSIETA school in Brest, France (2004-2005). He continued at Masaryk University focusing on network traffic analysis and cybersecurity education. In 2014, he defended his habilitation thesis and became an associate professor.

According to the submitted materials (last updated on August 30, 2024), he has authored or co-authored 17 original research journal articles listed in the WoS database (+1 more in Scopus), and 68 articles in conference proceedings. He has published in top-tier journals, namely 8x Q1 (out of which 4x D1), and 6x Q2 based on AIS Quartile. He is the senior author of half of the journal papers (9 records) and senior or first author of a significant amount of conference papers. Two of his conference papers (at CORE rank A conference ACM SIGCSE) received Best paper award. The number of citations (as of August 30, 2024) was 1544 in Scopus without self-citations. The candidate has successfully applied for 9 scholarly projects (6x as principal investigator, 3x as co-principal investigator). He has been involved in the organization of 28 international conferences (mostly in program committees).

In comparison to the minimal criteria set by the Faculty of Informatics of Masaryk University (40 journal or conference papers in international databases, 15 high-quality papers and 100 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 professor appointment procedure in the field of Informatics.

Evaluation of the applicant's pedagogical experience

The candidate has taught at the Faculty of Informatics of Masaryk University since 2007 with the focus on cybersecurity topics. He has been involved as one of the teachers in 6 courses: 5 lectures (4 of them for at least 5 semesters) and 1 seminar (for 6 semesters). His contribution ranges from 1 lecture per semester up to 80% involvement as the primary teacher. The candidate has taught for at least 5 years / 10 semesters (the value stated in the minimal faculty requirements) but with a reduced teaching load as compared to the expected teaching load of associate professors at the Faculty of Informatics of Masaryk University (which is 6-8 h/week, i.e. 3-4 standard courses 2h/week each). Thus, while a typical associate professor teaches 30-40 course-semesters during 5 years, the candidate has taught 14.4 course-semesters during his career according to the submitted materials (about half of the minimal expected load). This was most probably due to his part-time employment at the Faculty of Informatics until July 2023.

On the positive side, he has not only taught but also prepared courses, he was the principal architect and key contributor to the introduction and development of 2 courses (PV198 and PA211). He has written 1 textbook chapter and 7 educational texts. In spite of his part-time employment until 2023, he has already supervised 40 Bachelor's theses (38 defended), 22 Master's theses (21 defended) and 10 PhD theses (8 defended). These numbers exceed the minimal faculty criteria (2 supervised defended PhD theses) and compensate for the low teaching load.

The candidate has also worked as an examiner in state examination boards (Bachelor and Master levels, since 2018) and doctoral board at the Faculty of Informatics of Masaryk University (since 2020).

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

Evaluation of the applicant as a respected and recognized scholarly or artistic figure in a given field

The candidate's activities in the cybersecurity field are well visible at both national and international level. As mentioned above, he has published a large number of papers in top-tier journals and at established conferences in the field (receiving two Best paper awards at CORE Rank A conference), has served in many programme committees of international conferences and has led multiple research projects (funded at both national and EU level). For the extraordinary results of the KYPO cyber range project, he received the award of the Minister of the Interior for outstanding results in the field of security research, experimental development and innovation in 2016.

In addition, the candidate has been very active in collaboration with industry and is a co-founder of INVEA-TECH company (a university spin-off that later evolved into two companies, one of which managed to sell its intellectual property to Intel). He has also participated in two U.S. Army-funded research projects whose results were used also in industry.

The candidate is also very active in cybersecurity-related education. In 2012, he introduced the idea of KYPO Cyber Range that serves as a unique training facility during various national and international events for creating, conducting and evaluating cybersecurity hand-on training.

Four experts in the field supplied their written opinion on the merits of the candidate. In their reports, they confirm that the candidate is a respected and recognized scholarly figure in the field and strongly support his promotion. Here are excerpts from their letters:

Prof. Aiko Pras (University of Twente):

"In my view the group at Masaryk University is among the best, or probably I should say the best, university group worldwide in the area of network monitoring and analysis. In that area the group's focus is on cyber security and cyber ranges (cybersecurity education). Whereas the first topic was already well established at Masaryk when Pavel Čeleda took over as group leader, the second was initiated by him. I remember quite well the discussions we had in Budapest, I believe it was 2012 during a EUNICE conference, on the topic of cyber ranges. In fact he was (one of) the first to promote that topic within the academic world. Since then he was able to make the Masaryk KYPO approach as one of the best cyber ranges world-wide. Pavel is not only an excellent research leader for network traffic analysis and cybersecurity education at Masaryk university, but is also well known and highly regarded within the International networking community. This becomes not only apparent from the large number of publications he (co)authored, but also from the many international conferences he helped organising, such as NOMS, IM, TMA and AIMS. Without any doubts I can recommend Pavel Čeleda for a professor position at the Masaryk University Brno."

Prof. Dr. Burkhard Stiller (University of Zürich):

"The main skills of Pavel and his work and working style include a technically excellent, detailed, and up-to-the-point focus, which always indicate technically possible solutions to relevant problems, highly relevant for IT systems' operations in place today. As such, it has to be noted that Pavel does not only define models, but that Pavel builds technically strong prototypes and evaluates those in settings, which show practical relevance and real-world constraints such that logically dependent parameters and consequences become clear. The scientific evidence and knowledge advance are key in his outcomes documented in an impressive set of scientific publications, project participation and leadership, and teaching on a highly qualified expert level. Thus, I am very happy to fully support without any hesitation at all the application of doc. Ing. Pavel Čeleda, PhD, for the above named position of a full professorship."

Prof. Shanchieh Jay Yang (Rochester Institute of Technology):

"Dr. Čeleda has a rich body of work in the area of network traffic processing and analysis. His works on automating the generation and monitoring of IP flows has led to commercial products and services. His work on KYPO – a cloud-based Cyber Range based on OpenStack – has enabled a much broader impact beyond publications. It is instrumental for cybersecurity training and education. This has also led to his pedagogical research on cybersecurity education. He has also published a few highly cited tutorial papers and recognized in highly reputable venues such as ACM SIGCSE in recent years. Recognizing his previous formal affiliation with Institute of Computer Science, where he spent part of his effort on IT operations, I would very much commend his research accomplishments, not just in terms of citations but also on their practical impacts to cybersecurity. I also know that Dr. Čeleda has taught a few courses in Faculty of Informatics and supervised many undergraduate and graduate students for research. His expertise in network security clearly translates to education and training."

Prof. Michal Pěchouček (Czech Technical University in Prague):

"I know Doc. Pavel Čeleda as a well established and respected scientist in the field of cybersecurity in the Czech Republic and internationally. I actively was collaborating with Pavel on a research project, funded by the US Army, more than a decade ago, which resulted in 11 publications that we have co-authored jointly with me, Pavel and team of collaborators. Thus I declare here a potential conflict of interest for a possible consideration. As a professor at the Czech Technical University in Prague, I can confirm that Pavel would qualify for full professorship, given traditionally high standards required at our institution. His teaching contribution in the field of cybersecurity is excellent and is one of the reasons why the Masaryk university is the go-to teaching cybersecurity institution in the country. Particularly valuable is his advisory role on students projects, through which he is instrumental in transferring his unique knowledge to the next generation. ... Besides excellence in research and teaching Pavel stands out by his passion for applied research and technology transfer. In this capacity he is a role model for younger generation of researchers and academics. ... I fully support professorship application of Pavel Čeleda. He will be an excellent professor, inspiration to students. Masaryk university is fortunate to have the opportunity to welcome Pavel Čeleda in the community of professors."

Conclusion: The applicant **is** a respected and recognized scholarly figure in his/her field. The applicant **has** made a significant contribution to the development of his/her field. The applicant **constitutes** a leading figure in his/her field of scholarship or research.

Secret vote results

Voting took place: electronically

Number of board members		5
Number of votes cast		5
of which	in favour	4
	against	1

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 role as a respected and recognized scholarly or artistic figure, the board hereby submits a proposal to the Scientific Board of the Faculty of Informatics of Masaryk University to **appoint the applicant professor** of Informatics.

In Brno on 09.10.2024

prof. RNDr. Michal Kozubek, Ph.D.