July 13, 2018

Dean
Prof. Ing. Zdeněk Plíva, Ph.D
Faculty of Mechatronics, Informatics and Interdisciplinary Studies
Technical University of Liberec
Liberec, Czech Republic

<p style="text-align:center">Letter of Recommendation for the Promotion of Zbyněk Koldovský</p>

Dear Prof. Plíva,

It is my pleasure to write this strong supporting letter for the promotion of Doc. Zbyněk Koldovský to the title of Professor at the Technical University of Liberec, Faculty of Mechatronics, Informatics and Interdisciplinary Studies.

I am a Full Professor of Electrical Engineering at Bar-Ilan University, Israel and my field of expertise is acoustic signal processing. I serve as the head of the Signal Processing track in my faculty as well as heading the graduate studies program. I also serve as the chair of the Audio and Acoustic Signal Processing Technical Committee of the Signal Processing Society of IEEE. I know Dr. Koldovský and his work very well for more than six years. I have visited Dr. Koldovský in Liberec several times and he has visited me just recently as part of Erasmus+ program. We have also met in many conferences and scientific events. We share a mutual research interests and have collaborated on joint publications and organization of special session. I have closely observed Dr. Koldovský contributions and scientific achievement in the field of signal processing and independent component analysis with applications to audio processing. Based on my research expertise and my acquaintance with Dr. Koldovský, I feel very confident to write this recommendation letter.

Dr. Koldovský has a very impressive publication record in top-notch journals and conferences. He has published 14 journal papers, 3 book chapters and 70+ conference papers. His work is characterized by mathematical rigor and clear writing. He is one of the leading experts in blind source separation and extraction using independent component analysis, tensor decompositions and sparse representations. While editing (together with colleagues) a book "Audio Source Separation and Speech Enhancement" (Wiley, 2018), Dr. Koldovský was our first choice to write a chapter on independent component and vector analysis. As expected, the chapter (writing together with H. Sawada) turn out to be an excellent overview on the state-of-the-art.

Dr. Koldovský was also the leading collaborator in our joint paper:

> Z. Koldovský, J. Málek, and S. Gannot, "Spatial Source Subtraction Based on Incomplete Measurements of Relative Transfer Function," *IEEE/ACM Trans. on Speech, Audio and Language Processing*, vol. 23, no. 8, pp. 1335 - 1347, August 2015.

In this journal paper, Dr. Koldovský has promoted the application of sparse reconstruction to the estimation of an important acoustic feature vector widely-used in the field of multichannel speech processing (the relative transfer function – RTF). Dr. Koldovský was also the leading organizer of our joint special session in EUSIPCO 2015, one of the leading signal processing conferences.

I was also very impressed by two important contributions co-authored by Dr. Koldovský that address the important – and many times overlooked – of performance bounds of independent component analysis:

> Z. Koldovský and F. Nesta, "Performance Analysis of Source Image Estimators in Blind Source Separation," *IEEE Transactions on Signal Processing*, vol. 65, no. 16, pp. 4166-4176, August 2017.

> P. Tichavský, A. H. Phan, and Z. Koldovský, "Cramér-Rao-Induced Bounds for CANDECOMP/PARAFAC Tensor Decomposition," *IEEE Transactions on Signal Processing*, vol. 61, no. 8, pp. 1986-1997, April 2013.

Dr. Koldovský is also an excellent tutor and a lecturer. I heard his talks in many conferences and they were always very clear and inspiring. Very recently Dr. Koldovský has visited our faculty and gave a two-weeks full course on ICA. All students were very satisfied by the excellent course and the teaching skills of Dr. Koldovský. Such a course is missing in our program, as in many curricula of academic institutes, and Dr. Koldovský course is a valuable addition to this area.

Dr. Koldovský is also a very active contributor to our scientific community. He was a co-organizer of Sisec 2013, co-organizer of special session at EUSIPCO 2015 and 2017, a technical co-chair of IWAENC 2018 (one of the leading workshops in the field of audio processing), and perhaps most notably the general co-chair of LVA/ICA 2015, held in Liberec.

In summary, Doc. Zbyněk Koldovský is a very fruitful and knowledgeable and leading researcher in the field of signal processing, specifically blind source separation. Doc. Zbyněk Koldovský highly deserves a promotion the title of Professor. I am confident that any leading institute, including my university, would promote Dr. Koldovský to the title of a full professor without any hesitations.

Based on the above, I add my strongest support to the promotion of Doc. Zbyněk Koldovský to the title of Professor at the Technical University of Liberec.

Sincerely,
Prof. Sharon Gannot
Signal Processing Track – Head
Faculty of Engineering,
Bar-Ilan University, Israel