PERSONAL INFORMATION

Degrees before the name:	Ing.
Family name, First name:	Hakl, František
Degrees after the name:	CSc.
Researcher unique identifier(s):	0000-0001-6291-2767 (ORCID)
Date of birth:	4 Jan 1965
Nationality:	Czech
URL for web site:	http://www.cs.cas.cz/~hakl

František Hakl is a researcher at Institute of Computer Science, the Czech Academy of Sciences, where he has worked since 1989. He recieved his CSc. (Ph.D. equivalent) in 1993, the topic of his thesis was Univalent neural networks. Currently he is Head of the Department of Machine Learning. His research interests include machine learning, namely theoretical aspects of deep learning methods, the approximation potential of these methods, lower and upper estimates of the complexity of their architectures and estimates the number of learning patterns guaranteeing predefined accuracy of learning. He uses these methods in detection of physical processes in high energy physics. He designed a specific neural network that allows extremely fast data processing suitable for online evaluation of very fast physical phenomenos. This neural network model is patent-protected.

According to WOS, he has 83 citations and an h-index 3; according to SCOPUS, he has 80 citations and an h-index 4. Altogether, he published 10 journal articles, 12 international conference papers, and 3 other works including the patent.

EDUCATION

1993 CSc..
Computer Science, Czech Academy of Sciences, Prague; PhD thesis: ”Relationship between P-matrices and learning procedure of three-layer neural networks”.

1988 Ing.
Mathematical Engineering, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University, Prague; master thesis: ”Modeling oxidation Zr-alloys during thermal transitions“.

CURRENT POSITION(S)

1994 – researcher at Intitute of Computer Science, Czech Academy of Sciences

PREVIOUS POSITIONS

1989 – 1994 Ph.D. student at Institute of Computer Science, Czech Academy of Sciences

TEACHING ACTIVITIES

1996 – today Probabilistic learning theory and Neural networks and application, Department of Mathematics, FNSPE, CTU, Prague (two semestral lectures)

1997 - today supervisor of two PhD and appr. 20 MSc thesis

PROFESSIONAL SKILLS

Professional language skills: English, passive German and Russian.

Programming experience: OS Linux, C/C++, Perl, PHP, Python, Bash, LaTeX, PostScript, Java, Javascript, parallel computing

Realization: PHP NNSU server (RIV/67985807:_____/11:00366087), distributed web tools for data separation based on neural networks algorithms; private projects: Perl (accounting software), Python (GPS navigation tools), PHP (media albums, secured newsgroups) and other

MANAGERIAL EXPERIENCE

principal investigator of several scientific projects, e.g.:

Advanced statistical analysis and non-statistical separation techniques for physical processing detection in data sets sampled by means of elementary particle accelerators; project No. INGO LG12020, 2012-2014, funded by the Ministry of Education, Youth and Sports, budget 4 mil. CZK

Application of artificial neural networks in systems for person's and object's localization systems based on WiFi signal receptions; project No. TA01010490, funded by the Technological Agency of the Czech Republic, 2011 -- 2013, budget 3,7 mil. CZK

INTERNATIONAL AND NATIONAL COOPERATION

2012 – 2014 Cooperation with physical laboratory FERMILAB, Chicago, USA, selection of decay trees in collider D0

2007 – 2009 Participation in the project „Artificial intelligence prediction of volume of banknotes in circulation“, Czech National Bank

1995 – 2007 Cooperation with physical laboratory CEA Saclay, France, physical data separation

1995 – 2005 Cooperation with CERN Geneve, Switzerland, development of components for ATLAS experiment in Large Hadron Collider

PUBLICATION AND OTHER PROFFESIONAL ACTIVITIES

Author of Czech patent „Hardware Evaluator of Neural Network with Switching Units“, Czech Industrial Propriety Office, Patent No. 306533., 2017

Probabilistic learning model PAC - lecture notes. Prague: ICS CAS, 73 p. Technical Report, V-1227. 2015.

Fast Hardware Implementation of NNSU Separating Algorithm. Real Time Conference (RT). Piscataway: IEEE, pp. 1-8. ISBN 978-1-4799-3659-5, Japan, 2014.

Expectation of High Energy Physics Data Sets eparation Algorithms. Stochastic and Physical Monitoring Systems, Conference procceding, pp. 37-46, ISBN 978-80-01-05383-6, 2013.

F. Hakl, M. Holena, „Neural networks theory -- introduction“ (in Czech), textbook FNSPE, CTU, Prague.

Approximately 20 journal articles and proceedings

Prague, April 2018