



Piotr Klukowski, PhD

Machine Learning, Bioimage Informatics,
Computational NMR

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EDUCATION

- DEC 2018 PhD in Computer Science (Machine learning/Computational NMR)**
Cumulative thesis “Machine learning approaches for protein structure elucidation with NMR spectroscopy” defended with honors at [Wrocław University of Science and Technology](#) (Wrocław/Breslau, Poland). The dissertation is available online [[link](#)].
- SEP 2014 PhD candidate (Machine learning/Computational NMR)**
SEP 2018
Enrolled on the PhD program in Computer Science at [Wrocław University of Science and Technology](#). Thesis developed in collaboration with [ETH Zurich](#) and [University of Salzburg](#) researchers. Responsible for development of machine learning/optimization techniques for studies of protein structure and dynamics with nuclear magnetic resonance spectroscopy.
- JUL 2013 Predoc (Bioimage Informatics/Confocal microscopy)**
JUL 2014
Research placement at [Max Planck Institute of Molecular Cell Biology and Genetics](#) (Dresden, Germany). Responsible for development of image processing methods for analysis of 3D confocal images of liver tissue.
- FEB 2012 Double MSc in Computer Science (Machine Learning/Computational NMR)**
JUN 2013
Thesis defenses at [Blekinge Institute of Technology](#) (Karlskrona, Sweden) and [Wrocław University of Science and Technology](#) within double diploma program.

SELECTED ACHIEVEMENTS

- NOV 2015 Hugo Steinhaus distinction for research achievements in mathematical sciences**
granted by President of Wrocław, dr Rafał Dudkiewicz
- DEC 2013 Award in the competition for the best master thesis in computer science in Poland**
granted by Polish Information Processing Society
- DEC 2013 The best graduate student at Faculty of Computer Science and Management**
granted by Wrocław University of Science and Technology
- DEC 2012 Scholarship of Polish Ministry of Science and Higher Education**
DEC 2011
granted twice by minister prof. Barbara Kudrycka for research achievements

ACADEMIC EMPLOYMENT

- Since **Adjunct Professor**
MAR 2019 Employed at [Wrocław University of Science and Technology](#) at Department of Computer Science.
- FEB 2019 **Assistant Professor**
SEP 2018 Employed at [Wrocław University of Science and Technology](#) at Department of Computer Science.

JOURNAL ARTICLES

1. **Klukowski, P.** and Schubert, M. (2019). Chemical shift-based identification of monosaccharide spin-systems with NMR spectroscopy to complement untargeted glycomics. **Bioinformatics**, 35(2), 293-300.
2. **Klukowski, P.**, Augoff, M., Zięba, M., Drwal, M., Gonczarek, A., and Walczak, M. J. (2018). NMRNet: A deep learning approach to automated peak picking of protein NMR spectra. **Bioinformatics**, 34(15), 2590-2597.
3. **Klukowski, P.**, Augoff, M., Zamorski, M., Gonczarek, A., and Walczak, M. J. (2018). Application of Dirichlet process mixture model to the identification of spin systems in protein NMR spectra. **Journal of Biomolecular NMR**, 71(1), 11-18.
4. **Klukowski, P.**, Walczak, M. J., Gonczarek, A., Boudet, J., and Wider, G. (2015). Computer vision-based automated peak picking applied to protein NMR spectra. **Bioinformatics**, 31(18), 2981–2988.
5. Zięba, M., **Klukowski, P.**, Gonczarek, A., Nikolaev, Y., and Walczak, M. J. (2018). Gaussian process regression for automated signal tracking in step-wise perturbed nuclear magnetic resonance spectra. **Applied Soft Computing**, 68, 162-171.
6. Morales-Navarrete, H., Segovia-Miranda, F., **Klukowski, P.**, Meyer, K., Nonaka, H., Marsico, G., Chernykh, M., Kalaidzidis, A., Zerial, M., and Kalaidzidis, Y. (2015). A versatile pipeline for the multi-scale digital reconstruction and quantitative analysis of 3D tissue architecture. **eLife**, doi: 10.7554/eLife.11214

CONFERENCE TALKS AND ARTICLES

1. **Klukowski, P.**, Gonczarek, A. (2018). Towards fully automated protein structure elucidation with NMR spectroscopy, The 3rd International workshop on biomedical informatics with optimization and machine learning (**BOOM workshop**), 35th International Conference on Machine Learning (**ICML**), Stockholm, Sweden.
the extended abstract, the spotlight presentation, the poster
2. **Klukowski, P.**, Gonczarek, A. (2016). Deep Structured Models for Protein Structure Studies with Nuclear Magnetic Resonance Spectroscopy, PhD forum, The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML-PKDD**), Riva del Garda, Italy.
the extended abstract, the spotlight presentation, the poster
3. **Klukowski, P.**, Gonczarek, A., and Walczak, M. J. (2015). A benchmark for automated peak picking of protein NMR spectra, IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (**IEEE CIBCB**), Niagara Falls, Canada.
the article, the oral presentation

TEACHING

SEP 2015 **Introduction to machine learning**
SEP 2018 Laboratory classes in Python, based on selected chapters from Kevin Murphy's book "Machine Learning: A probabilistic perspective".

SEP 2015 **Introduction to optimization**
SEP 2018 Laboratory classes in Matlab: gradient methods, LPs, ILPs, MILPs, heuristic search.

TECHNICAL SKILLS AND CERTIFICATES

Languages		Programming	
Polish	Native fluency	Java SE/FX	5 years' experience, Oracle Certified Professional Java Programmer (OCPJ, 2012)
English	Fluent, FCE (2008), TOEFL (2011), two years of working/studying abroad (Sweden and Germany)	Python	4 years' experience
Machine Learning		Matlab	5 years' experience
ML frameworks	Tensorflow, Keras, Caffe, scikit-learn,	C++	1 years' experience
Data management	h5py, pandas	CUDA	basic knowledge, finished training at Stuttgart High-Performance Computing Center (2014)
Data visualization	matplotlib, seaborn	Tools	
Other	SciPy, NumPy, ND4J, DeepLearning4J	IDE	Eclipse, PyCharm
Software Design		Other	git, Jira, Confluence, Jenkins
Design Patterns	Basic knowledge		
UML	Basic knowledge		