Łukasz KIDZIŃSKI

Post-doctoral researcher at Stanford University

Education

2016 – present **Postdoctoral fellow**, *Stanford University*, California, United States.
Extracting insights and biomarkers from large scale longitudinal clinical data. Designing new statistical and computational tools for these data. Desinging new methods for data collection at scale (video analysis for gait monitoring and diagnostics). Research on human motor control using reinforcement learning techniques. Organizing NIPS 2017 Learning to Run challenge (400+ participants), and NIPS 2018 AI for prosthetics (400+ participants).
Advisors: Scott Delp, Trevor Hastie

2014 – 2016 **Postdoctoral fellow**, *École Polytechnique Fédérale de Lausanne*, Switzerland.
Management and execution of data science projects in CHILI Lab (Computer Human Interaction in Learning and Instruction), mentoring PhD students in the lab, research on Massive Online Open Courses).
Advisor: Pierre Dillenbourg

2011 – 2014 **PhD in Mathematical Statistics**, *Université libre de Bruxelles*, Belgium.
Thesis: Inference for stationary functional time series: dimension reduction and regression,
Advisor: Siegfried Hörmann.

2005 – 2011 **B.S. and M.S. in Mathematics**, *University of Warsaw*, Poland.
Thesis: Statistical foundations of recommender systems,
Advisor: Hung Son Nguyen.

2006 – 2010 **B.S. and M.S. in Computer Science**, *University of Warsaw*, Poland.
Thesis: Application of the language Objective-C in mobile development, a case study,
Advisor: Janusz Jabłonowski.

Honors, awards, grants, and sponsorships

2018 Stanford Data Science Fellow (internal grant; 9% acceptence rate)

EPFL-Stanford Exchange Program, Neuroscience (11,000 USD)

2017 Funds raised from Amazon AWS and NVIDIA for organizing NIPS challenges: "Learning to run" (100,000 USD) and DeepArt contest (70,000 USD)

2016 Distinguished Postdoctoral Fellow Scholarship (140,000 USD), Stanford

2015 IBM Global Entrepreneur for Cloud Startups (120,000 USD), jointly with Matthias Bethge, Alexander Ecker, Leon Gatys and Michał Warchoł

Swiss NSF grant for the project "Learning Analytics for Adaptive and Self-Improving Learning Environments" (∼355,000 USD), jointly with Pierre Dillenbourg

Contribution to Swiss NSF Big Data grant "Theory and methods for accurate and scalable learning machines" (∼600,000 USD), PI Volkan Cevher

2014 Research grant for a visit in UC Berkeley

2011 PhD scholarship within ARC grant, Robust Static and Dynamic Dependence Models

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PASCAL Group fellowship for the internship at the ETH Zürich

2007 Scholarship from the University of Warsaw for top students

2005 Participant in the 2nd round in Polish Olympiad in Mathematics

2002 – 2005 Participant in the 2nd round in Polish Olympiad in Informatics (4 times)

2002 Laureate of a computer science olympiad for gymnasiums LOGIA

1998 Finalist of junior polish chess championships

Research experience

January 2018 – March 2018 **EPFL**, *Visiting research scholar*, Lausanne, Switzerland.
Development of the reinforcement learning simulator with musculoskeletal models. Preparation of the submission of the challenege proposal to NIPS 2018.
Advisor: Marcel Salathé

July 2014 – May 2014 **UC Berkeley**, *Visiting research scholar*, Berkeley, United States.
Development of an R package based on my findings in Functional Data Analysis based on Fourier analysis of multivariate time series.
Advisor: David Brillinger

September 2013 – July 2013 **Colorado State University**, *Visiting research scholar*, Fort Collins, United States.
Research project on regression in functional time series context. Applications to financial and geospatial data.
Advisor: Piotr Kokoszka

September 2011 – July 2011 **ETH Zürich**, *Internship in the machine learning group*, Zürich, Switzerland.
Development of online tools for comparison of machine learning methods within `mloss.org` and `mldata.org` .
Advisor: Cheng Soon Ong

Other professional experience

present – January 2016 **DeepArt UA**, *Co-founder*, Tubingen, Germany.
Designing, developing and testing neural stye transfer techniques at scale. Releasing models through `deepart.io` platform, supporting a community of artists leveraging advancements of computer vision in their work. Over 1 million unique visitors up to date.

September 2014 – June 2012 **DREAM LINEUP LTD**, *Co-founder / Executive*, London, United Kingdom.
Development of a data-driven on-line football manager game.

June 2011 – October 2007 **LEMONET**, *Co-founder / Developer*, Warsaw, Poland.
Co-founder of `nogazpolaka.pl` - an online market with exclusive educational materials for polish Matura exam in years 2005-2014. Founder and developer of `neib.org` - a recommender system for venues.

Certificate programs

Winter 2017 **Stanford Ignite program**, *Stanford Graduate School of Business.*
Learning frameworks for identifying and evaluating hi-impact ideas and projects.

2010 – 2011 **ERASMUS exchange program**, *Vrije Universiteit Brussel.*
European "study abroad" program. Courses in computer science and statistics.

Journal publications

2018 Kidziński, Ł., Hastie, T. **Sparse longitudinal modeling using matrix completion** (under review, Biometrika, `https://arxiv.org/abs/1809.08771`)

Dunn, J.*, Kidziński, Ł.*, Runge, R.*, Hicks, J., Schüssler-Fiorenza Rose, S., Delp, S., Hastie, T., and Snyder, M., **Wearable Sensors Enable Personalized Predictions of Health Measurements** (1st revision, Nature Medicine, *equal contributions)

Kita, K., Kidziński, Ł., **Google Street View image of a house predicts car accident risk of its resident** (under review, Journal of Risk and Insurance)

Thomas, K., Kidziński, Ł., Halilaj, E., Fleming, S., Venkataraman, G., Gold, G., Delp, S., **Automated Classification of Knee X-rays Using Deep Neural Networks Outperforms Radiologist** (under review, Radiology)

Kidziński, Ł., Delp, S., Schwartz, M. **Automatic gait event detection in real-time using deep neural networks** (1st revision, PLOS One)

Rajagopal, A., Kidziński, Ł., McGlaughlin, A., Hicks J., Delp, S., Schwartz, M. **Estimating the effect size of surgery to improve walking in children with cerebral palsy from retrospective observational clinical data** (Nature Scientific Reports)

Asselborn, T., Gargot, T. , Kidziński, Ł., Johal, W., Cohen, D., Jolly, C., Dillenbourg, P. **Automated human-level diagnosis of dysgraphia using a consumer tablet** (Nature Digital Medicine)

Przybył, J., Kidziński, Ł., Hastie, T., Debiec-Rychter, M., Nusse, R., van de Rijn, M. **Gene expression profiling of low-grade endometrial stromal sarcoma indicates fusion protein-mediated activation of the Wnt signaling pathway** (Gynecologic oncology)

Prieto, L., Sharma, K., Kidziński, Ł. and Dillenbourg, P. **Orchestration Load Indicators and Patterns: In-the-wild Studies Using Mobile Eye-tracking** (IEEE Transactions on Learning Technologies)

2017 Kidziński, Ł., Kokoszka, M. and Jouzdani, N. **Principal component analysis of periodically correlated functional time series.** (Journal of Time Series Analysis, arXiv:1612.00040)

2016 Hörmann, S. and Kidziński, Ł., **A note on estimation in Hilbertian linear models.** (Scandinavian Journal of Statistics, arXiv:1208.2895)

2015 Hörmann, S., Kidziński, Ł. and Halin M., **Dynamic Functional Principal Component.** (Journals of the Royal Statistical Society Series B, arXiv:1210.7192)

2014 Hörmann, S., Kidziński, Ł. and Kokoszka M., **Estimation in functional lagged regression.** (Journal of Time Series, available at colostate.edu)

Conference papers

2018 Kidziński, Ł, Mohanty, S., Ong, C., Zhewei, H., Shuchang, Z., Pechenko, A., Stelmaszczyk, A., et al. **Learning to Run challenge solutions: Adapting reinforcement learning methods for neuromusculoskeletal environments**, (NIPS 2018 Competition Book)

Kidziński, Ł, Mohanty, S., Ong, C., Hicks, J., Carroll, S., Levine, S., Salathé, M., Delp, S. **Learning to Run challenge: Synthesizing physiologically accurate motion using deep reinforcement learning**, (NIPS 2018 Competition Book)

Suresha, S., Kidziński, Ł., Halilaj, E., Gold, G., Delp, S., **Automated staging of knee osteoarthritis severity using deep neural networks** (Osteoarthritis and Cartilage)

2016 Kidziński, Ł., Giannakos, M., Sampson, DG. and Dillenbourg, P. **A tutorial on machine learning in educational science** (State-of-the-Art and Future Directions of Smart Learning)

Liu, W., Kidziński, Ł. and Dillenbourg, P. **Semiautomatic Annotation of MOOC Forum Posts** (State-of-the-Art and Future Directions of Smart Learning)

Li, N., Kidziński, Ł. and Dillenbourg, P. **Augmenting Collaborative MOOC Video Viewing with Synchronized Textbook** (Human-Computer Interaction–INTERACT)

Li, N., Kidziński, Ł., Jermann, P. and Dillenbourg, P. **MOOC Video Interaction Patterns: What Do They Tell Us?** (Design for Teaching and Learning in a Networked World)

Li, N., Kidziński, Ł., Jermann, P. and Dillenbourg, P. **Characterising MOOC Video Behaviours with Video Interaction Styles: What do they tell?** (Proceedings of the 10th European Conference on Technology Enhanced Learning), ***(BEST PAPER AWARD)***

Delher, J., Kidziński, Ł., Alavi, H. and Dillenbourg, P. **Gamified Competition Features for Corporate MOOCs: The Battle Mode** (Proceedings of the European MOOCs Stakeholder Summit 2016)

Sharma, K., Kidziński, Ł., and Dillenbourg, P. **Towards Predicting Success in MOOCs: Pro-gramming Assignments** (Proceedings of the European MOOCs Stakeholder Summit 2016)

Dillenbourg, P., Li, N. and Kidziński, Ł., **Complications of the orchestrational clock** (From Books to MOOCs? Emerging Models of Learning and Teaching in Higher Education)

Faucon, L., Kidziński, Ł. and Dillenbourg, P., **Generative models for simulating MOOC students** (Proceedings of the 9th International Conference on Educational Data Mining)

Kidziński, Ł., Sharma, K. and Dillenbourg, P. **On generalizability of MOOC research** (Proceedings of the 9th International Conference on Educational Data Mining)

2015 Li, N., Kidziński, Ł., Jermann, P. and Dillenbourg, P. **How Do In-video Interactions Reflect Perceived Video Difficulty?** (Proceedings of the European MOOCs Stakeholder Summit)

Raca, M., Kidziński, Ł. and Dillenbourg, P. **Translating Head Motion into Attention-Towards Processing of Student's Body-Language** (Proceedings of the 8th International Conference on Educational Data Mining)

Patents

2018 Kidziński, Ł., Yang, B. Delp, S., Schwartz, M. **System and method for automatic clinical evaluation of gait using single or multi-camera recordings** (provisional patent)

Other conference and invited talks

2018 **Automatic monitoring of gait pathologies using a mobile phone**.
- Engineering in Medicine and Biology Society, Hawaii (USA), July 2018

AI for prosthetics project.
- Université Libre de Bruxelles (Belgium), June 2018
- Polish AI meetup, Kraków (Poland), June 2018
- ReWork: Deep Learning for Healthcare, Boston (USA), May 2018
- AI for good, Geneva (Switzerland), May 2018
- Statistics Department, University of Montreal (Canada), April 2018
- University of Montreal (Canada), April 2018

2017 **Learning to Run project**.
- Google Research, Zurich (Switzerland), March 2018
- NVIDIA, Zurich (Switzerland), March 2018
- NNAISENSE, Lugano (Switzerland), March 2018
- Polish AI meetup, Warsaw (Poland), March 2018
- TU Graz, Graz (Austria), February 2018
- Swiss Data Science Center, Lausanne (Switzerland), February 2018
- Seminars in: Statistics Department, BioRob Lab, CHILI Lab, Salathé Lab, EPFL (Switzerland), January-February 2018
- Applied Machine Learning Days, Lausanne (Switzerland), January 2018
- NIPS conference competition track, Los Angeles (CA, USA), December 2017
- Mobilize Center seminar, Stanford (CA, USA), October 2017

2016 **DeepArt.io project**.
- Dato Conference, San Francisco (CA, USA), July 2016
- CTI pitch competition, Lausanne (Switzerland), June 2016; **best pitch award**
- University of Warsaw (Poland), May 2016
- University of Ghent (Belgium), May 2016
- NVIDIA GTC Conference, San Jose (CA, USA), April 2016

2014 **Learning Analytics**.
- A series of lectures on modern statistical tools for education at scale, EPFL, Lausanne (Switzerland), September 2014

2013 **Frequency domain methods for functional time series**.
- Colorado State University, Fort Collins (Colorado, USA), August 2013

Dynamic Functional Principal Components.
- German-Polish Joint Conference on Probability and Mathematical Statistics, Toruń (Poland), June 2013
- PhD Day. Bruxelles (Belgium), May 2013

L'analyse de données fonctionnelles.
- Journée de la science, 10 minutes pour comprendre, Bruxelles (Belgium), April 2013

2012 **Estimation in Hilbertian linear models**.
- Belgian Statistics Sociaty Meeting, Liege (Belgium), October 2012
- PhD Day. Louvain (Belgium), September 2012
- Workshop on high dimensional and dependent functional data, Bristol (United Kingdom), September 2012

Other scientific contributions

Reviewer PLOS One, Journal of the American Statistical Association, The Annals of Applied Statistics, Journal of Multivariate Analysis, Computational Statistics and Data Analysis, Econometrics and Statistics, Electronic Journal of Statistics, Statistics and Probability Letters, Iranian Journal of Statistics, Journal of Computing in Higher Education, Journal of Educational Data Mining, Mathematical Reviews, Computer-Human Interaction conference and other.

Editor — Frontiers in Big Data

Popular media — **Learning to Run NIPS challenge**, *2017.*
News articles (links): Tech Crunch, IEEE news, EPFL news, NVIDIA dev blog, AWS AI blog, China Daily, Stanford news and other.

DeepArt.io project, *2016.*
News articles (links): Technologist, Live Science, Education times, Futura Science, 24heures, Le temps, EPFL news (video) and other.

Teaching

fall 2014 & 2015 — Digital education and learning analytics, EPFL

spring 2014 — Analyse Multivariée, exercise sessions, ULB (in french)

fall 2012 & 2013 — Stochastic Models, exercise sessions, ULB

Student associations

present / March 2018 — **HealthAI working group**, *Founder*, Stanford, California, United States.
Bringing together experts from Schools of Medicine, Engineering, and Business (400+ members) to tackle medical problems at scale using state-of-the-art AI methods. Organizing seminars, workshops, hackathons, and symposia. `https://health-ai.github.io/`

present / September 2016 — **eWear students society**, *Co-founder*, Stanford, California, United States.
Bringing together industrial and academic stakeholders from the domain of wearable technologies. Organized Stanford wearable annual symposium (150+ participants), startinf from September 2017. `https://wearable.stanford.edu/content/stanford-e-wear-student-society`

Languages

English — full professional competence

French — full professional competence — *C1 equivalent certificate*

Polish — native speaker

German — notions — *level A2*

Selected projects

R packages — `https://github.com/kidzik/fcomplete/` - package for trajectory estimation in sparsely observed data using matrix completion; R

`https://cran.r-project.org/web/packages/freqdom/index.html` - package for applying spectral methods to multivariate time series (part of the PhD project); R

`https://cran.r-project.org/web/packages/freqdom.fda/index.html` - wrapper around the "freqdom" package for applying frequency domain methods in functional data analysis; R

`https://cran.r-project.org/web/packages/pcdpca/index.html` - package for processing pariodically correlated multivariate time series; R

3d simulations — `https://github.com/stanfordnmbl/osim-rl` - reinforcement learning environment for finding motor control patterns. Demo: `https://www.dropbox.com/s/44q1r560suzookg/1step.mp4?dl=0` ; python

`https://www.youtube.com/watch?v=katwwoEJUFk` - HEPI 3d messenger, bachelor thesis in Computer Science (joint project with P. Bedyński and A. Matan); C++, ogre 3D, OpenGL

Online platforms	http://deepart.io/ - application of deep learning algorithms to repaint pictures in the style of a selected artist; python. More information: https://www.youtube.com/watch?v=olj6rktnr40
	http://mldata.org/ - repository of machine learning datasets and algorithms, contribution during the visit at the ETH Zurich; (source code and my contributions), https://github.com/open-machine-learning/mldata/graphs/contributors
	http://sweetrs.org/ - sweets recommender system, an experiment for the master thesis in Computer Science; python, django (source code https://github.com/kidzik/sweet-recommender-system)
	http://neib.org/ - venue recommender system, part of the master thesis in Computer Science; python, java script, Objective-C, Matlab (source code https://bitbucket.org/dziki/neib)
Other projects	http://kidzinski.com/ - personal homepage with links to other projects