



Zbigniew Wojna

Curriculum Vitae

Objective

Research project advancing deep learning techniques for machine vision..

Work Experience

- Oct 2016 - **Co-founder of TensorFlight, Inc.**
Research on satellite and street view imagery for property insurance. Successfully secured seed funding. TensorFlight was featured as top 2 AI startups among few hundreds by Capgemini InnovatorsRace50.
- June 2017 - **Research Intern in Facebook AI Research Group with Iasonas Kokkinos**, FACEBOOK, Paris.
Oct 2017 Research on the multi-task problem for computer vision.
- Nov 2016 - **Research Intern in Machine Perception with Vittorio Ferrari**, GOOGLE, Switzerland.
Apr 2017 Research decoder architecture for multiple dense prediction problems such as semantic segmentation, depth prediction, colorization, edge discovery or super-resolution.
- Aug 2016 - **Research Intern in Machine Perception with Kevin Murphy**, GOOGLE, United States.
Sep 2016 Build the state of the art object detection model. Based on this work our team won the 1st place in 2016 MS COCO detection challenge by huge margin comparing to other contestants. MS COCO is the most challenging machine vision benchmark.
- Jun 2016 - **Research Intern in the StreetSmart Team**, GOOGLE, United States.
Jul 2016 Build the street name transcription model for street name signs from Street View images in TensorFlow.
- Jun 2015 - **Research Intern in the Applied Health Team**, GOOGLE DEEPMIND, United Kingdom.
Jan 2016 Research on deep learning for medical imaging data.
- Mar-May 2015 **Intern in Google Flu Trends team**, GOOGLE, United Kingdom.
The main goal of the internship was to reveal if weather can improve Google Flu Trends model, that predicts the current percentage of the population with Influenza Like Illness symptoms. I used machine learning and statistical libraries in python, testing all the available methods. In the result, the investigation helped to improve the model, but weather data doesn't bring any improvement above the model based on queries.
- 2012-2014 **Software Developer Engineering in Test**, MICROSOFT, United States.
I worked across different teams in SQL Azure. In Analytic Team was designing test infrastructure for data pipeline component. During presence in Performance Predictability Team worked on the new feature - isolated pools of cloud resources, that can be requested by customers. Helped in Machine Health Team to analyze, diagnose and repair nodes within clusters. Finally, was in the Cluster Buildout Team developing an automated framework to limit the human interaction during the cluster bootstrap process. I have gained experience with testing, distributed computing, cluster management, SQL Server and PowerShell.
- Feb-Apr 2012 **Intern**, NVIDIA, United States.
Improving the quality of the latest Nvidia drivers for Mac Os X systems.
- Jun-Sep 2011 **Intern**, NVIDIA, United States.
I have been working on new functionalities of Nvidia's drivers for Mac Os X System architecture.
- 2010-2012 **Developer**, FOUNDATION FOR INFORMATION TECHNOLOGY DEVELOPMENT, Poland.
I was designing, verifying, coding and testing problems for the most prestigious algorithmic competitions in Poland: "Polish Olympiad in Informatics" and "Potyczki algorytmiczne".

- 2008-2011 **Lecturer**, OSRODEK EDUKACJI INFORMATYCZNEJ I ZASTOSOWAN KOMPUTEROW, Poland.
I was giving lectures preparing high school students for algorithmic competitions. I needed to write sample codes, which often was done in a tricky way and required strong analytic skills. I must plan the lectures and prepare complicated problems to solve and easily explain the topic.
- 2009-2010 **Coach**, PROJECT GENIUS, Poland.
I am coach of high-speed reading and fast learning. I organized workshops for groups of students and adults.

Education

- Sep 2014-Nov **University College London, United Kingdom, UK PhD Centre in Financial Computing.**
PhD in Financial Computing and Machine Learning. Succeeded among 700 applicants per 15 positions. During the first year attending the Computational Statistics & Machine Learning program at UCL. My research is about large scale deep learning solutions for computer vision.
- 2014 **University of Warsaw, Poland, Faculty of Mathematics, Informatics and Mechanics.**
Master in Financial Mathematics. Completed 8 out of 12 courses. Terminated due to PhD studies.
- 2012-2014 **University of Warsaw, Poland, Faculty of Mathematics, Informatics and Mechanics.**
Master in Computer Science. Final Grade: Very good.
- 2008-2012 **University of Warsaw, Poland, Faculty of Mathematics, Informatics and Mechanics.**
Bachelor in Computer Science. Final grade: Better than good.
- 2008-2011 **University of Warsaw, Poland, Faculty of Mathematics, Informatics and Mechanics.**
Bachelor in Mathematics. Final grade: Good.
- May-Aug 2012 **Ludwig Maximilians University Munich, Germany, Faculty of Mathematics, CS and Statistics.**
Erasmus Exchange Program during Bachelor in Computer Science. Grade: 4.40 / 5.0
- 2006-2008 **XIV high school named Stanislaw Staszic in Warsaw, Poland.**
One of the best public schools in Poland specializing in mathematics, informatics and physics. I have studied in an Experimental Mathematical class (Matex), with mathematics lecturers from Warsaw University.
- 2005-2006 **I high school named Nicolaus Copernicus in Lodz, Poland.**
Specialised in mathematics and physics. One of the three best schools in Poland.

Research Projects

- 2017 **The Devil is in the Decoder.**
Zbigniew Wojna, Vittorio Ferrari, Sergio Guadarrama, Nathan Silberman, Liang-Chieh Chen, Alireza Fathi, Jasper Uijlings
Spotlight at British Machine Vision Conference (BMVC) 2017
- 2016-2017 **Attention-based Extraction of Structured Information from Street View Imagery.**
Zbigniew Wojna, Alex Gorban, Dar-Shyang Lee, Kevin Murphy, Qian Yu, Yeqing Li, Julian Ibarz
Published at International Conference on Document Analysis and Recognition (ICDAR) 2017
- 2016-2017 **9th place in the world in The Digital Mammography DREAM Challenge.**
Stephen Morrell, Robert Kemp, Can Khoo, Karl Trygve Kalleberg, Gerard Cardoso, Zbigniew Wojna
Published at International Conference on Document Analysis and Recognition (ICDAR) 2017
- 2017 **Semantic Instance Segmentation via Deep Metric Learning.**
Alireza Fathi, Zbigniew Wojna, Vivek Rathod, Peng Wang, Hyun Oh Song, Sergio Guadarrama, Kevin P Murphy
- 2016 **Speed/accuracy trade-offs for modern convolutional object detectors.**
Jonathan Huang, Vivek Rathod, Chen Sun, Menglong Zhu, Anoop Korattikara, Alireza Fathi, Ian Fischer, Zbigniew Wojna, Yang Song, Sergio Guadarrama, Kevin Murphy
Published at Computer Vision and Pattern Recognition (CVPR) 2017
Winner submission of 2017 MS COCO object detection challenge.
- 2015 **Rethinking the Inception Architecture for Computer Vision.**
Christian Szegedy, Vincent Vanhoucke, Sergey Ioffe, Jonathon Shlens, Zbigniew Wojna

Published at Computer Vision and Pattern Recognition (CVPR) 2016
First single model to beat humans on ImageNet benchmark.

- 2015 **Fast methods in training deep neural networks for image recognition.**
Under supervision of Prof John Shawe-Taylor, University College London, United Kingdom
Master of Research Thesis in Machine Learning
- 2012-2014 **Portfolio Selection System & Conveyor.**
Under supervision of Dr Michal Galas, Warsaw University (Poland) in collaboration with UK PhD Centre in Financial Computing (UK)
Research project in algorithmic trading as Master's Thesis in Computer Science
- 2010-2011 **Framework supporting development and backtesting of trading systems for financial markets.**
Under supervision of Dr Janusz Jablonowski, Warsaw University, Poland
Bachelor's Thesis in Computer Science
- 2010-2011 **Comparison of decision systems and statistical methods used for time series prediction.**
Under supervision of Dr hab. Dominik Slezak, Warsaw University, Poland
Bachelor's Thesis in Mathematics
- 2010 **PIKA - Portfolio of Actuarial and Catastrophic Instruments - pricing and simulation.**
Under supervision of Dr Kamil Kulesza, Centre for Industrial Applications of Mathematics and Systems Engineering (CIAMSE) of Polish Academy of Sciences, Poland
Winter School 2010: Industrial Mathematics

Reviewer for conferences

- 2017 Neural Information Processing Systems (NIPS)
- 2017 International Conference on Computer Vision (ICCV)

Other achievements

- 2016 Coach of UCL teams in competitive programming, best achieved 11th place at the Northwestern Europe Regional Contest 2016 (NWERC), ACM ICPC.
- 2015 Coach of UCL teams in competitive programming, best achieved 8th place at the Northwestern Europe Regional Contest 2015 (NWERC), ACM ICPC.
- 2013 30th place in the most prestigious algorithmic competitions in Poland "Potyczki algorytmiczne"
- 2008 Finalist of the Polish Olympiad in Mathematics
- 2008 Finalist of the Polish Olympiad in Physics
- 2008 Participant of Final of the Polish Olympiad in Astronomy
- 2007 Finalist of the Polish Olympiad in Physics
- 2007 4th place in the International Mathematics and Logic Games Championships in Paris
- 2006 Participant of the Final of Polish Olympiad in Astronomy
- 2006 Place in the top ten in the International European Youth Stock Market Game

Scholarships

- 2008-2010 Scholarship for subjects ordered by the European Union.
- 2008-2010 Scholarship for achievements very good exam results.

Projects

- 2013-2014 Kernel patch that allows for transparent encrypting individual files exploiting extensions in ext4 file system.
- 2013-2014 Transactional database working in kernel space as kernel module.

- 2013-2014 Linux driver of external PCI device for calculating SHA-1 sums for data blocks.
- 2013-2014 Linker for Unix ELF files generating own "fixed load location" binary format. Loader for the binaries.
- 2013-2014 Effective framework for managing university plans in SQL for Oracle DB.
- 2012-2013 Implementation of KNN algorithm in OpenCL targeted for Nvidia's GPU.
- 2012-2013 Distributed solution for Laplace's equation based on successive over-relaxation method using Message Passing Interface (MPI) for synchronization in the cluster.
- 2012-2013 Distributed BFS algorithm using Map-Reduce model and Hadoop on the cluster.
- 2012-2013 Design XML and XSLT scheme for the polish legislative process with the application in Java.
- 2011-2012 Interactive Scotland Yard Game version for Android. Mr. X tries to escape detectives, who receive his real-time location every minute on Google Maps. Detectives can see one another and chat to plan a strategy to catch Mr. X. Developed in Java.
- 2011-2012 Compiler in Java of objective programming language to x86 Assembler.
- 2011-2012 Compiler in Java of procedural programming language to Java bytecode.
- 2011-2012 Interpreter of own defined programming language in Haskell.
- 2010-2011 Simple service in Java for movie rating and receiving recommendations. I used Google Web Toolkit and open source implementation of MapReduce framework i.e., Hadoop.
- 2010-2011 Web Service in Django that allows for renting objects among users.
- 2009-2010 Navigation system for Warsaw implements finding the shortest way between two points, simulation of a car journey and basic functionality of a computer map. Developed in Java.
- 2009-2010 WWW application in Django makes available to play multiplayer Sudoku simultaneously.
- 2009-2010 Simple system for booking tickets in Java based on PostgreSQL.
- 2009-2010 Mail client in Java coded in paradigm of peer-to-peer implements my own designed protocol.

Computer skills

- Advanced Deep Learning for Machine Vision, Python, Caffe, Torch with Lua, TensorFlow
Knowledge of algorithms, data structures and complexity analysis (both theoretical and practical)
- Experienced C / C++ with STL, Java, R, \LaTeX , C# and .NET
Octave, Weka, Assembler, Java bytecode, Objective-C, Haskell, Smalltalk, Prolog, Promela, Agda
Pascal, Bash, PowerShell, XML, HTML, CSS, JavaScript, Django, Google Web Toolkit, TCP/IP
Hadoop, MapReduce, MPI, OpenCL, Android, Spring, OSGi, Apache ServiceMix
SQL, SQL Server, Apache Kafka, Apache ZooKeeper
Eclipse, IntelliJ, XCode, Visual Studio, Make, Ant, Maven, Gradle, Nexus
Git, Svn, Perforce, VSTS, Gerrit, Hudson, TeamCity, Sonar, YouTrack, XWiki, Mac Os X

Organizations

- 2006-2008 **Polish Children's Fund.**
During these two years participated in many mathematical, physics and computer science workshops focused on research in collaboration with professors from the best universities in Poland.
- 2001-2007 **The Polish Scouting and Guiding Association.**
6 years of active work, leader of a small team. Prepared valuable personal development activities and helped in organizing large scout camps. Volunteered in charitable actions, prepared activities for kids with difficult family situation.
- 2003-2005 **The Grand Orchestra of Christmas Charity.**
Volunteer at the national event that helps to gain money for the medical equipment for disabled children.

Soft Skills

- Experienced in working with a team.
- Practitioner, Master and Advanced Master in NLP, Hypnosis, Acting, Brand Creation, Emotional Control and Coaching training with international trainer Mateusz Grzesiak.

Completed training in body language, communication, time management, negotiations and sale.
Ability of fast learning and speed reading.
Finished first aid course.

Languages

Advanced Polish, English
Basic Spanish, German, Russian

Interests

- Solving algorithmic problems
- Sports: squash, football, running
- Traveling with hiking: climbed Mount Blanc (4810m), drove 9000 miles in 3 weeks sightseeing West America with climbing Mount Whitney (4421m), Mount Hua Shan Path in China, Mount Fuji in Japan (3776m), via ferratas in The Dolomites, El Caminito del Rey in Spain.