Martin Drozdík

Curriculum Vitae



Research interests

- Multi-objective optimization
- Differential evolution
- Computational geometry
- Evolutionary computation in general

Key skills

MATHEMATICS Algorithm design, graph algorithms, probability theory, statistics.

C++ 6 years active experience. Deep interest in best practices and C++11/14. Experience with high-performance code and parallelization.

 Q_T 3 years active experience, especially in GUI design and implementation.

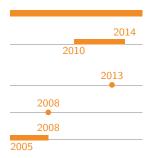
IT skills

Operating systems LINUX / UBUNTU / BASH

Office MERCURIAL, LIBREOFFICE, LATEX, INKSCAPE

Programming JavaScript, Matlab / Octave, SQL, R, Eigen, Mathgl

Web development HTML, CSS



Awards and scholarships

Monbukagakusho, Scholarship of the Japanese Ministry of Education, Awarded to two students from Slovakia annually to pursue a PhD course.

IEEE Young Researcher Presentation Award, IEEE Session, Niigata.

Erasmus, Full scholarship and tuition for 6 months (University of Pisa).

Dean's motivational scholarship, top 10% of class, awarded 4 times.

About me

I have a very strong sense of *beauty* and *quality*. I aim for the highest efficiency in everything I do, and I always strive to *do The right thing*.



Professional experience

PhD student, Tanaka-Hernan-Akimoto Laboratory,

Shinshu University, Nagano, Japan,

Multi-objective optimization using evolutionary computation.

- Study of :
 - self-adaptation and learning within multi-objective evolutionary algorithms
 - rotational invariance of multi-objective optimizers.
- Oevelopment of :
 - high-performance, multi-dimensional, geometric data structures (C++)
 - graphical application to analyze data from numerical experiments (QT)
 - a library of multi-objective evolutionary algorithms (C++).
- Publishing in one of the best journals in the field (IEEE TEVC).
- Presentation at top tier conferences (GECCO, LION, SEAL).
- Peer review of top journals and conferences (EJOR, IEEE TEVC, GECCO). My publications are available at researchgate.net/profile/martin_drozdik.



Open source project contributor, $\rm EIGEN: C++$ linear algebra library. Recently my first patch was merged.

Researcher, DOLPHIN TEAM, INRIA, Lille, France,

Exploration of differential evolution parameters $(C++/Q_T)$.

- Extensive numeric experimentation using the Grid5000 cluster computer.
- Analysis and interpretation of the data using a simple laptop computer.

 $\begin{array}{ll} \textbf{Programmer}, \ Accenture \ Technology \ Solutions, \ Vienna, \ Austria, \\ Greenfield \ project \ for \ Allianz \ AG. \end{array}$

- Communication in German and English.
- Administration of IBM mainframe jobs (JCL, ISPF, DB2, PL/I).
- Writing technical documentation.

2008

2011

Freelance programmer, Ministry of environment of Slovakia, Bratislava, Slovakia,

Digital archive of news articles.

- \circ Implementation of a data entry form in MS $\operatorname{Access}.$
- \circ Design and implementation of retrieval software in C++.

Volunteer, *Initiative to preserve environment in Bratislava old town*.

• Collecting signatures.

- Public relations.
- Participation in legal battles.

We saved the park on Belopotockeho street from being replaced by an apartment building (park.estranky.sk).



Languages

English Advanced 10+ years, IT and mathematics terminology.

Japanese Intermediate Living in Japan for 3 years, actively studying.

German Intermediate 8 months on an IT project in Austria.

Italian Intermediate Studied mathematics and economics in Italian.

French Beginner Actively studying.

Slovak/Czech Native

Major publications

2015 M. Drozdik, H. Aguirre, Y. Akimoto, and K. Tanaka

Comparison of Parameter Control Mechanisms in Multi-objective Differential Evolution

Presented at the *Learning and Intelligent Optimization (LION9)* conference, To appear in *Lecture Notes in Computer Science*.

2014 M. Drozdik, H. Aguirre, Y. Akimoto, and K. Tanaka

Computational Cost Reduction of

Non-dominated Sorting Using M-front

In IEEE Transactions on Evolutionary Computation.

Rotated Bi-objective Optimization Functions

2014 M. Drozdik, K. Tanaka, H. Aguirre, S. Verel, A. Liefooghe, and B. Derbel An Analysis of Differential Evolution Parameters on

Presented at the Simulated Evolution and Learning (SEAL2014) conference, published in Lecture Notes in Computer Science, volume 8886.

2013 M. Drozdik, H. Aguirre, and K. Tanaka

Attempt to Reduce the Computational Complexity in Multi-objective Differential Evolution Algorithms

Presented at the GECCO 2013 conference, published in Proceedings of the 15th Annual Conference on Genetic and Evolutionary Computation.



2010

2008

2009

2008

2005

Formal education

PhD, COMPUTER SCIENCE,

Department of Mathematics and System Development, Shinshu University, Nagano, Japan, Graduating on $25^{\rm th}$ of March 2015.

Title of thesis : Improvements in Understanding and Performance of Multiobjective Differential Evolution

Master, Applied Mathematics,

Comenius University in Bratislava, Slovakia,

Graduated with honors.

Title of thesis: Stochastic Processes in State Space Form and ML Estimation of Their Parameters

Erasmus exchange student, MATHEMATICS AND ECONOMICS, University of Pisa, Italy.

Bachelor, APPLIED MATHEMATICS,

Comenius University in Bratislava, Slovakia,

Graduated with honors.

Title of thesis: Strange Functions in Mathematical Analysis



Football I play regularly.

Videogames Real time strategy.

Sci-fi literature Especially Robert Heinlein, Arthur C. Clarke, and Joe Haldeman.