Martin Drozdík

Curriculum Vitae

Biörnsonova 1 Bratislava, 81105 Slovakia \$\(\mathbe{\mon}}\}}\endot{\mode{\m ⋈ drozdik.svk@gmail.com www.martindrozdik.com



Key skills

MATHEMATICS

Multi-objective optimization, evolutionary computation, computational geometry, 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.

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

IT skills

Operating systems LINUX / UBUNTU / BASH

Office MERCURIAL, LIBREOFFICE, LATEX, INKSCAPE

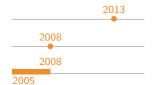
Programming Valgrind, Qmake, Matlab/Octave, SQL, R, Eigen

Web development JAVASCRIPT, HTML, CSS



Awards and scholarships

Monbukagakusho, Scholarship of the Japanese Ministry of Education, Awarded to two research students from Slovakia annually. Selection based on research plan quality and recommendation from a prospective supervisor from the Japanese side.



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.

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

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*.

2015

Professional experience

Doctoral student, Tanaka-Hernan-Akimoto laboratory, Shinshu University, Nagano, Japan,

Multi-objective optimization using evolutionary computation.

- Developed a method to keep track of non-dominated individuals (NDI) in the
 population of an evolutionary multi-objective optimizer after each change to
 the population. This method performs up to 400 fewer comparisons than the
 brute force method and works up to 4 times faster than the state-of-the art
 divide and conquer algorithm (which cannot keep track of NDI at all times).
- Studied:
 - self-adaptation and learning within multi-objective evolutionary algorithms
 - rotational invariance of multi-objective optimizers.
- Oeveloped:
 - 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++).
- Peer reviewed at top journals and conferences (EJOR, IEEE TEVC, GECCO).



2011

2010

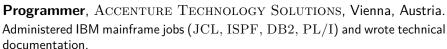
2008

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

Researcher, DOLPHIN TEAM, INRIA, Lille, France,

Exploration of differential evolution parameters (C++/QT).

- Performed numeric experimentation using the Grid5000 cluster computer.
- Analyzed and interpreted tens of GB of data using a single laptop computer.



Freelance programmer, MINISTRY OF ENVIRONMENT OF SLOVAKIA, Bratislava, Slovakia,

Digital archive of news articles.

- Implemented a data entry tool for teammates who classified the articles.
- \circ Designed and implemented an application to browse >2000 pdf files (C++).

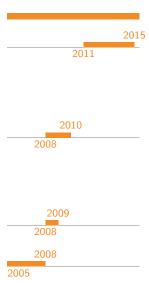


Freelance math tutor.

Teaching linear algebra and mathematical analysis, mostly in one on one lessons.

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

Helped save the park on Belopotockeho street from being replaced by an apartment building by collecting over 1000 valid petition signatures and participating in legal battles (park.estranky.sk).



Formal education

Doctorate, Engineering (Computer Science),

Department of Mathematics and System Development, Shinshu University, Nagano, Japan.

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

Books that influenced me professionally

Robert C. Martin Clean Code

Scott Meyers Effective C++, Effective Modern C++

Herb Sutter Exceptional C++ Style

Free time

Football I play regularly.

Videogames Real time strategy.

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