



Matyukhina Alina Curriculum Vitae

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Work Experience

June– July, 2014

Student Researcher, Software Developer for the project: «Creation of new Wolfram Mathematica function: FindListFunction[]»
 Wolfram Research Inc., Boston, **USA**

April-June, 2014

Software Engineer Intern
 Bombardier -the Evolution of Mobility, **Canada**

June– July, 2013

Research Assistant in Applied Mathematics group for the project "Applications of Number Theory to Wireless Communications and Security"
 Technology Academy, **Finland**

Teaching Experience

January–April, 2014

Teaching Assistant for the course "Calculus"
 University of Toronto, **Canada**

Sept. 2012-Sept. 2014

Teaching Assistant for the course "Solution of mathematical and computer science Olympiad problems"
 Lyceum of Donetsk National University, **Ukraine**

Computer Skills

Python, C, Delphi, Object Pascal, Wolfram Mathematica, MatLab

Languages

*-English (Level C1 by Cambridge CAE Exam),
 -German (A2-B1)
 -Russian, Ukrainian (Native)*

Education

Bachelor of Science 2011-2015

Math & IT
The Donetsk National University, Ukraine

Visiting Student 2013-2014

Math & Computer Science
University of Toronto, Canada,
 Grant from government of Ukraine

High school Student 2009-2011

Computer science
Lyceum of Donetsk National University, Ukraine
 Graduated with Gold Medal

Comprehensive school Student 2000-2009

with advanced study of English
 Graduated with honors

Music School Piano Department 2003-2008

Graduated with honors

Research works

- 1.«Creation of new Wolfram Mathematica function: FindListFunction[]»
2. «Determination of the optimal radiation conditions of the malignant tumors treatment using mathematical modeling»
3. «Applications of Number Theory to Wireless Communications and Security»
4. «The asymptotic behavior of recursive sequences: $a_{n+1} = a_n - a_n^k, k > 1$ and $b_{n+1} = b_n + b_n^k, k < 0$ »
5. «Two-dimensional variation of the Pompeiu problems»
6. «Ontopsychology of scientific discovery. Symbiosis of logical thinking and imagination as the best environment for the implementation of human discovery»
7. «Divisibility of recursive sequence elements»

Main Publications

2014
Book "Efficient Algorithm for divisibility discovery on recursive sequences"
LAP Lambert Academic Publishing, Saarbrücken, Germany

2013
Articles "Factorizations the members of sequences"
Math and CS Journal, National Academy of Sciences of Ukraine

2012
Proceedings of the II-th International Scientific and Practical Conference 2012 among young scientists
"Scientific youth: innovative approaches in education and science", *Russia*

2012
Proceedings of the International Conference SWorld «Modern trends of cryptography», *Russia*

Conferences and seminar talks

July, 2014
International Conference on Privacy, Security and Trust, Toronto, Canada

February, 2014
Winter School and Workshop "Higher Structures in Algebraic Analysis" University of Padova, Italia

September, 2013
1st Heidelberg Laureate Forum- forum of the Abel Prize, the Fields Medal, and the ACM Turing Award winners Heidelberg, Germany

July, 2013
The 9-th International Algebraic Conference Lviv, Ukraine

April, 2013
International conference of students and young scientists "Lomonosov-2013" Moscow State University, Russia

February, 2013
Cryptography 2013 Moscow State University, Russia

February, 2013
International Winter school for graduate computer science students Higher school of economics, Moscow, Russia

Awards and Grants

2014
Bayhost scholarship to attend summer school at the University of Regensburg, Germany

2014
Diploma of the best student research work in math & computer science
National Academy of Science of Ukraine

2013
The 1-st place at the International Mathematical Russian Olympiad
National Academy of Science of Russia

2013
Selected to attend and awarded a travel grant for 1st Heidelberg Laureate Forum

International Mathematical Society, Association of Computing Machinery

2013
Presidential merit scholarship
Government of Ukraine

2013
The 1-st place and Diploma for the best report based on the results of conference "Lomonosov"
2012, 2013, 2014

Dean's Scholarship
Donetsk National University

2013
Award "The Best Student, Researcher of the year"
Government of Ukraine

2013
The best student scientific work in math and CS
Presidium of the Russian Academy of Sciences

2012
The 2-nd place at the All-Ukrainian Student Math Olympiad-2012

2012
The first place at the International competition of CS works. Became a laureate. Won 100,000 RUB FINAM, Moscow, Russia

2011
Diploma and Gold medal "Yale Science & Engineering Association Medallion" for most scientific achievement in math & CS
YALE UNIVERSITY, USA

2011
Certificate of qualification in Computer Science
The Ministry of Education, Research, Romania

Hello everyone!

I'm a *mathematics and Information Technology* student in my final year in Ukraine. Last year based on the grant from government of Ukraine I studied computer science and mathematics at the *University of Toronto* in Canada.

My research interests are all over the map, ranging from number theory, cryptography, to mathematical and numerical analyses tumor therapy with oncolytic virus, radiation therapy, bioinformatics, biomedical robotics.



Since high school I've been seriously engaged in *research activities*. While being in high school I got to meet professors of mathematical and CS sciences who inspired me to do research in this field. At this stage my research interests were the *number theory and cryptography*. I've written several research papers already. My project is recognized by the *Yale Science & Engineering Association* (USA) for the *most scientific achievement* in the international competition. In October, 2014 my manuscript "Efficient Algorithm for divisibility discovery on recursive sequence" was published in Lambert Academic Publishing in Saarbrücken, Germany.

After my second year of studies in university I decided to fulfill my dream and *switch my major to bioinformatics, cancer treatment research*. Thanks to my strong knowledge in mathematics this transition from pure mathematics to applied mathematics in oncology research was sufficiently easy. Now I'm very interested in the problem relating to mathematical modeling of tumor growth, radiation therapy, bioinformatics. During my studies in Canada I created a project "Determination of the optimal radiation conditions of the malignant tumors treatment using mathematical modeling". In this research work I modified linear-quadratic model allows the calculation of tolerant doses, as well as probability of occurrence of radiation complications in the tissues as a function of the volume of the irradiation of a single dose and the total dose. This model can be used in radiological clinic for determination of tolerant doses and probability of radiation complications in tissues, as functions of volume of irradiation, single and total dose.

In Sept. 2013 I *represented my country* Ukraine in the *Heidelberg Laureate Forum in Germany*. There I got a chance to get acquainted with up-to-date research of the winners of the most prestigious awards in Applied Mathematics and Computer Science such as the Abel Prize, the Fields Medal, and the ACM Turing Award. Selection was done by the Representatives of the American Mathematical Society and Association of Computing Machinery.

I have grown up doing countless little 'research projects' as hobbies. I have a natural thirst for knowledge and an insatiable appetite for reading books about a particular topic.

I'm ambitious person, I like to challenge myself in completely new fields, push myself to new heights and achieve a difficult goal. My motto in life is "Per aspera ad astra". That's why I want to do a Phd.

I never lost a chance to explore something new and code. I worked in Applied Mathematics group as a research assistant for the project "Applications of Number Theory to Wireless Communications and Security" in *Technology Academy, Finland*. And then I got a *diploma of excellence in computer science* from INFOMATRIX in Romania.



I have experience in programming. From June to July this year I was a *student researcher* in *Wolfram Research Inc in Boston, USA*. During this internship *I worked for the project «Creation of new Wolfram Mathematica function: FindListFunction[]».*

Working on this

project I have an incredible learning experience. And I'm looking forward to an eventful, exciting other projects!

I worked as a *Teacher Assistant* for the course "Calculus" at the *University of Toronto* during one semester. Also I taught the course "Solution of mathematical and computer science Olympiad problems" at the *Lyceum of Donetsk National University, Ukraine* during two years.

My passion for teaching has provided me with a unique skill set which I believe will be critical for a successful career. My communication skills strengthened as I challenged myself to understand and respond to the students' questions while they tackled complex mathematical concepts. To convey the material clearly to students with diverse learning styles, I developed different approaches to explain a single concept. I also embraced and supported a team culture, utilizing student feedback to improve my own performance and encouraging students to engage each other in their learning.



I can bring enthusiasm and energy into this Phd program because I love meeting new people and working in a team. I consider myself to be a *quick learner, open-minded* and very responsible. I also pride myself on being *self-motivated, creative, eager to learn and flexible*.

My varied academic curriculum provided me a solid knowledge of the different subjects implied in the research project. I also developed good skills in *science communication*, which could make me easy to spread research results in scientific contexts as journals, workshop and conferences, as well as public ones, like newspapers, magazines and expositions.

Given my record of good academic achievement and *strong interest in your research program-mathematical modeling of brain tumor growth*, I am certain that, if given the opportunity, I will enjoy working on the topics that ignite my curiosity the most. In addition to my academic qualifications, I am confident that my experience and international background will meet your research school expectations.

Thank you for considering my application.

Best Regards,
Alina Matyukhina

Referees

Referee 1

Name Prof. Valeriy Volchkov

Address Ukraine, Donetsk National University

Email volchkovdonnu@ukr.net

Referee 2

Name Prof. Leonid Oridoroga

Address Institute of Applied Mathematics and Mechanics, National Academy of Sciences of Ukraine

Email leonid_oridoroga@rambler.ru

Referee 3

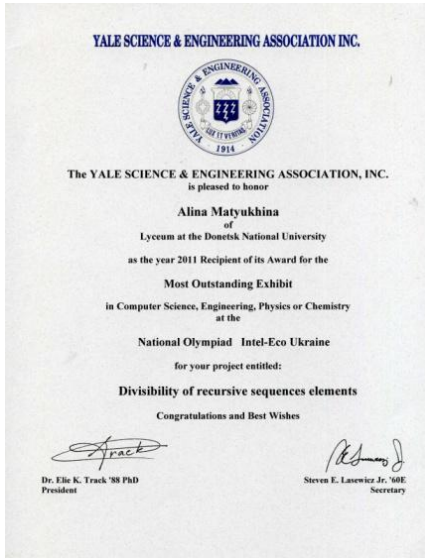
Name Prof. Valentin Alfimov

Address Lyceum of Donetsk National University

Email v.alfimov@inbox.ru

1. Awards and Certificates

1) The Gold Medal & Diploma from *Yale Science Engineering Association* for most scientific achievement in mathematics and computer science at the international competition.



2) Diploma of the best scientific work at an international conference “Lomonosow” in *Moscow State University, Russia*



3) Diploma of the best scientific work by *Russian Academy of Natural Sciences*

4) Diploma by the *Ministry of Science and Education of Ukraine*





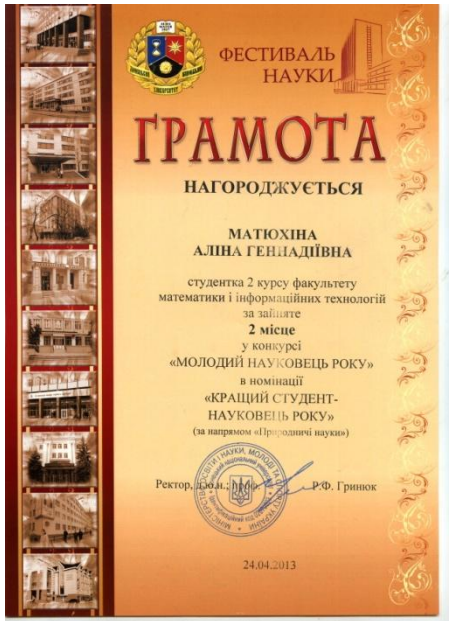
5) Diploma by *Presidium of the National Academy of Sciences of Ukraine*

6) Certificate of qualification in Computer Science Informatrix by The *Ministry of Education, Research and Youth, Romania*

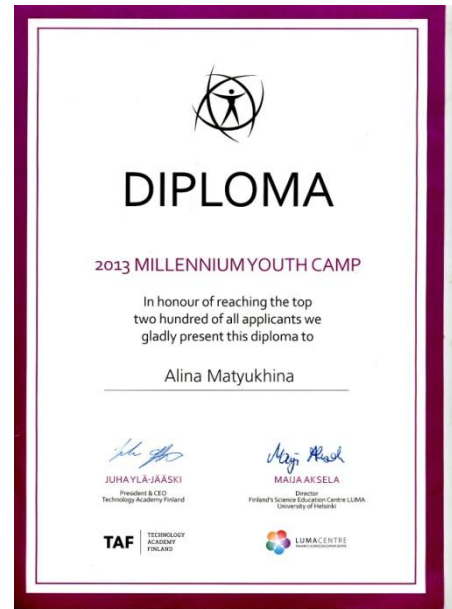


7) Certificate of participation in the 1st Heidelberg Laureate Forum in *Germany*. Selected to attend and awarded a travel grant for 1st Heidelberg Laureate Forum from *Scientific Committee and representatives of the International Mathematical Society, Association of Computing Machinery, the Norwegian Academy of Science and others.*





8) Diploma “The best student- researcher of the year 2013” by *Donetsk National University*



9) Diploma by Technology Academy, *Finland*



10) Certificate of Competence in the Trade Marks and Designs by *Office Harmonization in the internal Market, Spain*



11) Certificate of Merit of the *Academic Council of Donetsk National University* in winning first place in the All-Ukrainian Competition