

# Pesho Ivanov

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## SUMMARY

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PhD student at ETH Zurich in algorithmic computational biology.  
Worked at Google and prepared students for olympiads in informatics.  
Interested in cooperative structures.

## EDUCATION

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APR 2017 — NOW	PhD student on <b>Reliable Computational Biology</b> <i>Prof. Martin Vechev's</i> Secure, Reliable, and Intelligent Systems Lab (SRI) Computer Science department ETH Zurich, Switzerland
APR 2015 — FEB 2017	Master degree in <b>Software Engineering</b> ( <i>extra-mural</i> ) Thesis: <i>Framework for Genomic Reconstruction Algorithms</i> Shumen University, Bulgaria
JUN 2014	Bachelor degree in <b>Computer Informatics</b> Shumen University, Bulgaria ↑ transferred because of a crazy ban from entering Russia
SEP 2009 — JUN 2013 (interrupted by visa issues)	Specialist degree ( <i>equivalent to Bachelor+Master</i> ) in <b>Applied Mathematics and Informatics</b> Moscow State University, Russia // calculus, Computer vision
SEP 2008 — JUN 2009 (left to Moscow)	Bachelor degree in <b>Computer science</b> // + led seminars in advanced algorithmics Sofia University, Bulgaria // mainly discrete maths
SEP 2000 — JUN 2008	Mathematics and Physics profile // award for most scientific achievements of his year Shumen High school of Sciences, Bulgaria

### Additional:

SEP 2011 — JUN 2013	Master degree ( <i>not accredited</i> ) in <b>Bioinformatics</b> // + taught algorithms to biologists Yandex School of Data Mining, Moscow, Russia
JAN 2011	VISION AND MACHINE-LEARNING RESEARCH SCHOOL, ENS Lyon, France
JUL 2008	RUSSIAN SUMMER INFORMATICS CAMP, Kostroma, Russia // 3 weeks of problems and theory
AUG 2007	PHYSICS CAMP, Panitsite, Bulgaria // 3 weeks of maths and physics
2004 — 2007	SUMMER RESEARCH INFORMATICS CAMP, Varna, Bulgaria // 2-week problem solving
2001 — 2008	MATHEMATICS AND INFORMATICS PRIVATE SCHOOL "A&B", Shumen, Bulgaria

## INTERNSHIPS

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- JUN 2016 – Bioinformatics internship on Single-cell transcriptomics lymphoma patients  
MAR 2017 Prof. Martin Vechev, [Software Reliability Lab](#), ETH Zurich  
PD Dr. Emmanuella Guenova, [Dermatology Clinic](#), University of Zurich
- JUL 2013 – Summer internship on [SPAdeS](#) open source genome assembler // [chimeras presentation](#)  
AUG 2013 // [proof of concept: replication bugs to enhance assembly in open source assembler](#)  
Prof. Pavel Pevzner's, [Algorithmic Biology Lab](#), St. Petersburg Academic University
- SEP 2012 – Microbiological models designer // [Microcin modelling](#)  
JUN 2013 Prof. Konstantin Severinov's lab, [Institute of Gene biology](#), Russian Academy of Sciences
- JUL 2012 – Research internship on probabilistic verification of biological models  
AUG 2012 // [insisted on my own topic on virus-bacteria interaction](#) [\[Summary\]](#)  
Prof. Martin Vechev's, [Software Reliability Lab](#), ETH Zurich
- JUL 2011 – Computational Geometry Algorithms Library ([CGAL](#)) internship  
AUG 2011 [Google Summer of Code](#) // [implemented topological operators on tetrahedral meshes](#)
- JUL 2007 – Developer of a bin-packing genetic algorithm for glass cutting optimization  
SEP 2007 [Telepol Net](#), Bulgaria // [appreciating evolution and first algorithm in production](#)

## PUBLICATIONS

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- Fast and Optimal Sequence-to-Graph Alignment Guided by Seeds  
P. Ivanov, B. Bichsel, M. Vechev  
*International Conference on Research in Computational Molecular Biology (RECOMB) 2022*
- ASTARIX: Fast and Optimal Sequence-to-Graph Alignment  
P. Ivanov, B. Bichsel, H. Mustafa, A. Kahles, G. Rätsch, M. Vechev  
*International Conference on Research in Computational Molecular Biology (RECOMB) 2020*
- DEBIN: Predicting debug information in stripped binaries  
J. He, P. Ivanov, P. Tsankov, V. Raychev, M. Vechev  
*Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security*
- Ineffective antibody-dependent cellular cytotoxicity in patients with cutaneous T cell lymphoma  
Y. Chang, M. Ziegler, D. Ignatova, P. Ivanov, R. Profanter, K. Kerl, R. Dummer,  
E. Contassot, L. French, A. Cozzio, S. Misailovic, W. Hoetzenecker, M. Vechev, E. Guenova  
*EXPERIMENTAL DERMATOLOGY*, 2018

## TEACHING

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SEP 2017 – NOW	Teaching Assistant for the courses <i>Algolab, Data structures and Algorithms, Parallel programming, Rigorous Software Engineering, Reliable AI, Theoretical Informatics</i> Computer Science department, ETH Zurich
SEP 2015, SEP 2018	Supervisor of high school students <i>Science&amp;Arts school “Science Xplore”</i> , Viseu, Portugal
NOV 2013 – JUN 2014	Informatics competitions trainer for high school students <i>Mathematics and Informatics Private School “A&amp;B”</i> , Shumen, Bulgaria
NOV 2013 – JAN 2014	Teaching Assistant for the Coursera <a href="#">Bioinformatics course</a> <i>Prof. Pavel Pevzner</i> , University of California, San Diego
AUG 2010	Lecturer at school students informatics camp // <a href="#">strongest Russian competitors</a> <i>Russian Summer Informatics Camp</i> , Saratov
MAR 2008 – JUN 2009	Teaching Assistant for “Design and Analysis of Algorithms” course <i>Faculty of mathematics and informatics, Sofia University</i> , Bulgaria
SEP 2008 – JUN 2009	Author of the problems in <a href="#">Online programming tournament</a> <i>Musala Soft, Bulgaria</i> // <a href="#">mainly discrete optimization problems</a>
2008 – 2009 2013 – 2014	Author of problems for Bulgarian Tournaments in Informatics Lecturer at National Informatics Camps <i>National Committee in Informatics, Bulgarian Ministry of Education</i>

## INDUSTRY

SEP 2014 – Software Engineer at Search  $\supset$  Knowledge  $\supset$  Infrastructure  
JAN 2016 *Google Zurich*

## AWARDS

*the competitions are National Bulgarian if nothing else stated*

1 <sup>st</sup> place	“MINKO BALKANSKI” COMPETITION IN INFORMATICS ’08
11 <sup>th</sup> place	TOPCODER HIGH SCHOOL FINALS, WEST LAFAYETTE, USA ’08
1 <sup>st</sup> place	AUTUMN TOURNAMENT IN INFORMATICS ’07
1 <sup>st</sup> place	STUDENT COMPETITION FOR THE DEAN’S CUP OF SOFIA UNIVERSITY ’07
2 <sup>nd</sup> place	INTERNATIONAL YOUNG PHYSICISTS TOURNAMENT (REGIONAL, IN TEAM) ’06
1 <sup>st</sup> place	“RUMEN GROZDANOV” INFORMATICS AND MATHEMATICS TOURNAMENT ’06
1 <sup>st</sup> place	WINTER TOURNAMENT IN INFORMATICS ’06

- Awarded as a **National Laureate in Informatics**, Bulgaria ’08
- Scholarship for science achievements of [AMERICAN FOUNDATION FOR BULGARIA](#) ’07–’08
- Participated in the **final rounds** of the BULGARIAN OLYMPIAD IN INFORMATICS ’05–’08
- Participated in the **final rounds** of the [TOPCODER HIGH SCHOOL](#), West Lafayette, USA ’07–’08
- Participated in the **final rounds** of “[MUSALA SOFT AND PC MAGAZINE](#)” competition ’07–’08

## GENERAL SKILLS

Algorithms: Graphs, Combinatorics, Strings, Geometry, Optimization, Dynamic Programming  
Programming: C / C++ (STL), Python (NumPy, SciPy, Matplotlib), MATLAB  
Tools: Unix, Bash, Vim, Git, ~~TEX~~  
Speaks: English, Russian, Bulgarian

## ACTIVITIES

- Solving algorithmic problems // [TOPCODER](#), [TIMUS](#), [ROSALIND](#)
- Supporting crowdsourcing, FOSS and open data
- Editing [wikipedia](#) and a [personal wiki](#)
- Running and paragliding // [42.195km in 3:43h](#), Zelenograd, Russia, Dec 2011  
// [100km in 13:19h](#), Vitosha mountain, Bulgaria, 2012
- Meditation // [GOENKA’S 10-DAY MEDITATION RETREAT](#), 2020