

# CURRICULUM VITAE

## Ihor Solodrai

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Software developer, self-employed

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## Employment

### Self-employed

04/2017 - present

Software development. Specialize in compilers and code analysis.

Currently I am a team lead on a project about automated migration of legacy PL/SQL to Java EE. Working with "ISS Soft".

### Middle software developer at "ISS Soft"

03/2015 – 03/2017

Worked on code analysis and reverse engineering tools for COBOL systems and Java EE applications with extensive SQL database interaction.

### Junior software developer at "ISS Soft"

10/2013 – 02/2015

Worked on compiler for proprietary language. Then worked on large project of migration of Java EE application to PL/SQL stored procedures.

### Gameplay scripter at "Argali Entertainment"

01/2013 – 09/2013

Worked on gameplay scripts for a number of game projects in HOG genre.

## Education

### Master's degree

2017

Master of Science in Computer Systems and Networks, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

Thesis: "Neuroevolution techniques for reinforcement learning."

### Bachelor's degree

2015

Bachelor of Science in Computer Engineering, National Technical University of Ukraine "Kyiv Polytechnic Institute"

Thesis: "A quality estimation system for Lisp programs"

## **Skills**

### **Programming languages**

- More than 5 years of experience in Common Lisp
- Fluent in Python, Bash, regular expressions
- Familiar with Java, a bit less with C#
- Have some experience in C, C++ and Haskell
- Worked with PL/SQL and COBOL as code analysis and compiler targets
- Have experience with XML, XSD schemas, XSL transformations

### **Technology**

- General
  - Experienced user of Linux and Windows
  - Version control tools: git (in particular GitLab), svn
  - Familiar with TeX
- Compilers and code analysis
  - Work with complex graphs and trees (like AST) on a daily basis
  - Expert in parsing and code generation
  - Implemented typical control-flow and data-flow analyses
  - Familiar with various metrics of software quality, design structure matrices etc.
- Heuristic algorithms and machine learning
  - Genetic algorithms (in particular, NEAT)
  - Feedforward neural networks
  - Reinforcement learning algorithms such as Q-learning and temporal-difference learning
  - Heuristic optimization algorithms such as particle swarm optimization, simulated annealing, artificial bee colony and others
  - Familiar with typical machine learning tasks such as linear regression, logistic regression, classification, clustering etc.

### **Languages**

- Advanced English (TOEFL score 98 which is equivalent to CEFR level C1)
- Native Ukrainian, fluent Russian
- Elementary Polish and German

## Additional education

- In 2013 had a training in Common Lisp programming at “ISS Soft”
- In 2013 completed MOOC “Functional Programming Principles in Scala” by Martin Odersky (Swiss Federal Institute of Technology in Lausanne) at coursera.org
- During 2017-2018 completed a part of specialization “Deep Learning” by Andrew Ng at coursera.org, specifically the following courses:
  - Neural Networks and Deep Learning
  - Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
  - Structuring Machine Learning Projects
- Enrolled in, but hadn't completed a number of MOOCs mostly in computer science

## Publications

- Solodrai, I. I., Marchenko, O. I., “Technique for combining neuroevolution and temporal-difference learning.” In *Proceedings of the 19-th International Conference on System Analysis and Information Technology*, page 140, Kyiv, Ukraine, May 22-25, 2017
- Solodrai, I. I., Marchenko, O. I., “Neuroevolution techniques for reinforcement learning.” In *Proceedings of the 9-th Scientific Conference of undergraduates and graduate students “Applied mathematics and computing”*, Kyiv, Ukraine, April 19-21, 2017 (in Ukrainian)
- Solodrai, I. I., Zarivniak, O. I., “Value state dependency graph.” *Proceedings of the XV All-Ukrainian R&D Students Conference “Innovations in Science and Technology” (part II)*, pages 92-93, Kyiv, Ukraine, November 24, 2015

## Contest experience

- As a member of a team, took part in [ICFP \(The International Conference on Functional Programming\) Programming Contest 2018](#).
- As a member of a team, took part in [ICFP Programming Contest 2017](#). Our implementation were able to get to the second round both in Lightning stage (first 24 hours) and in Full.
- As a member of a team, took part in [ICFP Programming Contest 2016](#). We took 27<sup>th</sup> place in final ranking (from more than 200 teams).
- In 2010 (in high school) was a participant in a number of competitions with project in physics:
  - “Intel ISEF Ukraine”, Kyiv

- “Rationalizers and inventors”, Kyiv
- “Scholars of the future”, Moscow

## Other experience

- While working at “ISS Soft” I was asked to find out what data structure is optimal for storage of the points-to graph (result of the pointer analysis), built for Java EE application. This was not a typical task, and it required a bit of work which might be considered as research.
- While working at “ISS Soft” I taught a short course about XML, XSD schemas and XSL transformations to interns.
- During 2011-2016 I was a coordinator of a group of volunteers from playua.net community, who worked on Ukrainian translation of computer games. I was involved in a localization for a dozen of titles including “Baldur’s Gate”, “Metro” game series and “Hand of Fate”.

## Professional and relevant interests

- Due to the nature of the projects I worked with, most of my programming experience is in *functional style* rather than OOP. As a result, though I obviously had to deal with OOP code and write in OOP style, I am not a fan of it.
- My master thesis as well as some out-of-the-academia education is in *machine learning and heuristic algorithms*. While I didn’t have many opportunities in my work to apply these skills, I am really fascinated by the field and hope to work in it.
- A considerable part of my life is related to *computer games*. I play them, though not as often as I would like to, and I even have a bit of experience making them and working with them. I also have a few ideas about creating my own games and hopefully I’ll get the opportunity to implement them some time in the future.
- I am also interested in the *cryptocurrency industry*. While I don’t have any professional experience in this area or major pieces of contribution to open-source projects, I am pretty familiar with key technical concepts of the field. I played around with things like Bitcoin RPC, wrote scripts that communicate with APIs of mining pools and exchanges, configured mining rigs, reported bugs etc.

## Personal information

Citizen of Ukraine. Married, no children.