Danil Annenkov
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EDUCATION

PhD, University of Copenhagen, DIKU — November, 2014 - October, 2017

Graduated with distinction from Irkutsk State Technical University,
Faculty of Cybernetics, Department of Automated Systems (5 of 5 years)
(equivalent to the Master's degree) — July, 2002

RESEARCH INTERESTS

Formal semantics of programming languages, functional programming, certified programming, type theory, homotopy type theory, applications of category theory in programming language research.

PUBLICATIONS

1. Danil Annenkov, Paolo Capriotti, Nicolai Kraus. Two-Level Type Theory and Applications. Submitted to ACM Transactions on Computational Logic (TOCL). arXiv preprint.
2. Danil Annenkov and Martin Elsman. Towards Certified Compilation of Financial Contracts. In *Proceedings of the 28th Nordic Workshop on Programming Theory (NWPT'16)*. Aalborg, DK. November, 2016.
3. Annenkov, D.V. , Cherkashin, E.A., Generation technique for Django MVC web framework using the Stratego transformation language. *36th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)*, IEEE, pp. 1084 -1087, 2013.
4. Annenkov, D.V., Domain-specific languages as a foundation of the approach to software development. *Proceedings of conference with international participation "Vinerovskie chteniya"*, pp. 142-146 (in Russian), 2013.
5. Evgeny A. Cherkashin , Polina V. Belykh, Danil V. Annenkov, Christina K. Paskal A Document Content Logical Layer Induction on the Base of Ontologies and Processing Changes. *Proceedings of International Conference on Applied Internet and Information Technologies*, University of Novi Sad Technical Faculty «Mihailo Pupin», Zrenjanin, Serbia, 2013. C. 252-257.
6. Cherkashin, E.A., Paramonov, V.V., Fedorov, R.K., Terehin, I.N., Pozdnyak, E.I., Annenkov, D.V., Information Systems Framework Synthesis on the Base of a Logical Approach. *Proceedings of International Conference on Applied Internet and Information Technologies*, October 26, Serbia, Zrenjanin. pp. 239-244, 2012.
7. Annenkov, D.V., Simulation and research of the securities market. *Bulletin of the Irkutsk State Technical University*, vol. 27, #3, pp. 68-71 (in Russian), 2006.
8. Annenkov, D.V., Petukhov, P.A., Torbeeva, A.S., Modeling the organization and functioning of the securities market, *Proceedings of conference "Vinerovskie chteniya"*, pp. 35-40, 2005.

PRESENTATIONS

1. *Towards Certified Compilation of Financial Contracts. Nordic Workshop on Programming Theory (NWPT'16)*. Aalborg, DK. November, 2016.
2. *Verifying the generation of payoff-language expressions.* HIPERFIT Workshop, Copenhagen, 2016
3. *Domain-specific languages as a foundation of an approach to the software development.* Conference with international participation "Vinerovskie chteniya", Irkutsk State Technical University, Russia, 2013
4. Annenkov, D.V., *Simulation as a set of methods and tools for analysis and synthesis of various systems (on the example of the securities market)*. Conference with international participation "Vinerovskie chteniya", Irkutsk State Technical University, Russia, 2005.

ACADEMIC/TEACHING EXPERIENCE

Teaching assistant, co-teacher 2015-2017
University of Copenhagen, DIKU.
Courses: Advanced Java, Advanced Computer Systems.
Co-supervision of Bachelor's projects

Part-time Lecturer September, 2010 - 2012
Irkutsk State Technical University, Faculty of Cybernetics
Taught the following courses: Web Programming, Technology of Programming.

Teacher July, 2010 - March, 2011
International Education Centre Aptech-ISTU

- Java Programming Language (ACCP Russia, semester 2) course.

Graduate Assistant September, 2002 - 2007
Irkutsk State Technical University, Faculty of Cybernetics

- Courses taught: Algorithmic Programming Languages, Organization of Databases, Operating Systems.
- Developed new curriculum of "Technology of Programming" course.

Graduate Research Assistant September, 2002 - 2007
Irkutsk State Technical University, Faculty of Cybernetics

- Stochastic modelling of financial time series.
- Development of tools for generation of random numbers with given properties.

FACULTY ACTIVITIES

Member of the organizing committee of the annual regional programming contest 2003 - 2005
Member of the organizing committee of the conference "Vinerovskie chteniya" 2004

PROFESSIONAL EXPERIENCE

Founder of Software Development Company 2009 - 2014
Web-based enterprise solutions
(CRM, Service Department Information System, e-Commerce)

Python/Javascript Developer September 2013 - January 2014

Exploriana Inc.
Member of guidemore.com development team.
Guidemore.com is a internet service for creation travel guides for mobile devices.
Programmer 2004 - 2005
Railroad Clinical Hospital, Irkutsk, Russia
Deployment of a medical information system

SKILLS

10+ years of programming experience (both industry and academic).
Programming languages
Java, Python, Javascript, Scala, Haskell, Racket (Lisp dialect), Stratego/XT.
Proof assistants
Coq, Lean, Agda (some experience)
Markup languages
XML, HTML, Markdown, reStructuredText
Version control systems
Svn, Git, Mercurial
Team Leadership
Led team of developers (3-4 persons).

LANGUAGES

Russian - native
English - upper intermediate (reading, writing, speaking), IELTS 7.0

PROJECTS

1. **Two-level type theory**

   An implementation of two-level type theory in the Lean proof assistant. Two-level type theory is a version of Martin-Löf type theory (MLTT), which consists of two fragments: the fibrant fragment (Homotopy Type Theory) and the strict fragment (MLTT with uniqueness of identity proofs).
   https://github.com/annenkov/two-level
2. **Contract DSL**
   Some extensions of the original Contract DSL (Patrick Bahr, Jost Berthold, Martin Elsman. Certified Symbolic Management of Financial Multi-Party Contracts, ICFP'2015) and compilation to the intermediate Payoff language implemented in Coq proof assistant.
   https://github.com/annenkov/contracts
3. **The HIPERFIT Portfolio Management Prototype**
   Web-based system that integrates the Contract DSL and the HIPERFIT parallel pricing engine (FINPAR). The system is written in Haskell and features automatic web-form generation on base of Haskell data types along with OpenCL code generation for payoff functions.
   https://github.com/HIPERFIT/prototype
4. **Stratego-SLL**

An interpreter and minimal positive supercompiler for first-order functional language (M_0 language from Morten Sørensen's Master Thesis) written in Stratego transformation language (Spoofax language workbench).
https://github.com/annenkov/stratego-sll

5. **Unmix project ported to Racket**
   Unmix was originally developed by Sergei A. Romanenko (Keldysh Institute of Applied Mathematics, Russian Academy of Sciences, Moscow, Russia)
   Unmix is a program specializer (based on partial evaluation) for a subset of Scheme.
   https://github.com/annenkov/unmix
6. **Entity Model DSL**
   Simple textual DSL for modelling entities with Python code generation.
   https://bitbucket.org/ib_soft/entity-model/
7. **Some bioinformatics algorithms in Haskell**
   Implementation of brute-force Regulatory Motifs Finding algorithm (formulated as a Median String problem) with two branch-and-bound strategies.
   https://bitbucket.org/ib_soft/haskell-samples