Mr Konstantin Devyatov

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Education

Heriot-Watt University, Edinburgh **Expected year of graduation: 2014**

BSc (hons) Computer Science **Expected grade: First Class**
Awarded certificate of merit (average >70%) for every year of study

University Projects

Hume Box Calculus Mechanisation *(dissertation project, supervised by Gudmund Grov)*
This project involves a novel programming language Hume, which combines purely functional language and finite state machine language to separate computation and coordination tasks. The language is designed to target safety critical, real-time, embedded and parallel systems in any combination. This is achieved by providing rigorous cost mechanisms of space and time, while keeping a high level of abstraction. Because of such complex properties of the language, the Box Calculus has been introduced by Grov and Michaelson. My dissertation project's main aim is to show that it is possible to mechanise Hume Box Calculus. To achieve this goal, the Box Calculus rules have been encoded as Quantomatic (open graph system with Isabel theorem proofer behind it) graph rewrite rules during my summer project as Research Assistant at Heriot-Watt University.

RecycleFinder *(web app for finding recycling points in Scotland and provides tips on reusing and reducing)*
RecycleFinder project is a result of the Heriot-Watt University 7 day Hackathon competition. The goal of this competition is to create a not-for-profit application that helps in the following areas: community, charity and environment. The software is a web app, combining the power of Google Maps API and intuitive user interface. It has been developed in using best practices, including HTML5 Boilerplate, CodeIgniter PHP framework and, since this was a group project, all changes have been committed to GoogleCode repository using git.
I was heavily involved in design, testing, preparing marketing material and supporting development indirectly.

CrushQuiz *(multiplatform community multiplayer quiz game)*
The purpose of CrushQuiz project was to create a community based game that could be played in a university department's crush/learning area. I was a part of 5 person team and was involved in all parts of the development. This game had to be accessible from the web on multiple platforms. We used PHP and JavaScript as the base. The project is planned to be displayed on department's crush area TV monitors, which are driven by small-form-factor PCs.

Jenga robot *(robot arm that plays interactive Jenga game)*
Jenga robot plays the Jenga game with users. During the game, a player and the robot take turns to remove a block from a tower and balance it on top, creating a taller and increasingly more unstable structure as the game progresses. In this project I've been working on motor microcontrollers in Assembly language to enable the robot to reconstruct the tower and restart the game.

Technical skills and knowledge

C	Individual university project aimed at creating a simple language compiler. Test automation implementation.
Java	Team and individual projects ranging from simple mailing systems to international flight booking systems. Experience in most of the software development lifecycle activities.
ML	In depth knowledge gained through middle- to long-term development at research assistant post and university coursework.
Ruby	Thorough exposure at the university year-long software development project, where a web application with complex additional features, such as scheduling, was produced with the Ruby-on-Rails framework.
PHP	Web application team development (back end scripting). Interconnecting websites and databases, implementing algorithms to enable web pages to be dynamic.

Other known languages:

Spark/Ada, Hume, Python, Shell, PowerShell, JavaScript, MySQL, UML, HTML5 & CSS3, Assembly.

Culloden Academy, Culloden, Inverness

2010	Advanced Highers: Mathematics (C), Physics (D) / Higher Computing (C)
2009	Highers: Mathematics (A), Physics (A), Business Management (A), Administration (A), Accounting & Finance (A)
2008	Intermediate 2 Mathematics (A)

Employment history

DevOps Enginner at *CloudReach* September 2013 – present

Using development skills in the operational environment in order to increase service quality. The intent is to fix or work around the root cause of operational issues, so that they do not reoccur.
In my experience I've found that teamwork is the most efficient method of achieving any goal. A lot of it comes down to conducting the team. In a team all participants have to contribute at a level proportional to their ability. I believe that in order for a team to work efficiently, all participant, including coordinator, must engage in the work. I see this concept being proven on day-to-day basis at the Network Operations Centre of CloudReach.

Coordinator of translations and representative of the organisation in UK at *"New Youth Policy"* February 2013 – present

Actively support and invigorate a group of translators, plan the activity of the department in order to swiftly reflect on the current moment, participate in English translations and work on new articles.
I have been controlling translation process in the organisation, planning and delegating the workload to a team of translators, as well as actively participating in the work process. As a representative of the New Youth Policy organisation, I have been participating and presenting at various conferences and forums.
I believe that planning together with anticipation are crucial foundations of decision-making. Every single action could be considered as an act of control. I am convinced of importance of understanding of general principles of control, consisting of identifying all control forces acting in an environment; then devising an optimal solution that would provide the required level of stability of the environment under control.

Research Assistant at *Heriot-Watt University* May 2013 – August 2013

Encoding the Hume programming language and the Hume box calculus as a theory of the Quantomatic graph rewrite system.
Hume is a novel programming language, consisting of three layers: outer declaration/metalanguage layer, which defines functions, types, etc; encapsulated in it is the purely functional expression layer, which provides high level abstraction to programmers; and outer coordination layer, which resembled finite state machine language. Every Hume program is made of boxes and wires. Boxes are the computation units, transitioning between inputs and outputs. Inside the boxes are operated by matching patterns to expressions, which could be complex functions. Once the data is processed by a box, it is passed into output wire, unless it is busy. Wire coordination is a part of a complex and strict costing mechanism, that makes it possible for Hume to predict space and time resources required for programs to run. Hume target applications are safety critical, real-time, embedded and parallel systems.
Because of such complex properties, Hume Box Calculus was developed, formalising reasoning about Hume. In order to make such calculus feasible, it needs to be mechanised. My project was to tackle this problem. The chosen environment was Quantomatic graph rewrite system, which uses Isabel theorem proofer to execute and verify its rules. My task was to encode the Box Calculus rules as Quantomatic graph rewrite rules and provide tools for transition from Hume source code into Quantomatic graphs and vice versa.

Personal Tutor at *LEAPS Summer School* June 2012 – July 2012

Leading tutorials, providing support and guidance for academic projects for a group of school leavers. Ensuring a sufficient level of preparation, when students breach the gap between school and university, academically and socially.

Software engineering intern at *Exterity* December 2011 – September 2012

Strongly focused on Quality Assurance and system testing.
Work as software engineering intern has allowed me to develop a responsible approach to work at hand and improve time-management skills to combine my efforts and divide time between different tasks.
As software engineering intern, I have developed professional level communication skill set, which has proven crucial to play an active part of product lifecycle. This includes efficient use of bug trackers, test plans/reports, participating in team/review meetings and, the most valuable, person-to-person commentary.