

# Curriculum vitae — Michal Beneš, Ph.D.

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## Education

- 2001–2005 Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic  
Ph.D. degree in mathematics  
thesis: Asymptotic behavior of regular orbits of  $C_0$  semigroups
- 2004 Marie Curie scholarship at University Karlsruhe, Germany (six months)
- 2000–2002 Eberhard Karls University, Tübingen, Germany  
master degree in mathematics; Thesis: Spectral mapping theorem
- 1996–2001 Faculty of Mathematics and Physics, Charles University, Prague  
master degree in mathematics; Thesis: Spectral mapping theorem

## Awards

ACM International Programming Contest, world finals:

2001 Vancouver, Canada—bronze medal

2000 Orlando, USA—bronze medal

Mathematical Competition for University Students:

2000 London, United Kingdom—first price

1999 Balaton, Hungary—first price

1998 Blagoevgrad, Bulgaria—first price

Olympiad in Mathematics, Physics, Informatics for secondary schools:

1996 International Olympiad in Mathematics, Mumbai, India—silver medal

1995 International Olympiad in Physics, Canberra, Australia—bronze medal

## Employment

### January 2010 – present, Two Sigma Investments LLC

Major New York based hedge fund <http://www.twosigma.com/>

*Position:* Quantitative Statistical Analyst

Member of a very successful trading group (details cannot be disclosed)

### March 2005 – December 2009, Nangu<sup>TV</sup>

Leading Czech provider of IPTV technology solutions <http://www.nangu.tv/>

*Last position:* Team-leader C/C++/Java

*Development:*

Media-oriented clustered storage (C++): build-in redundancy and load-balancing

Media caching server (C++)

RTSP compliant streamer (C++): simultaneous streaming of up to 2000 (depending on configuration) of different 2.5Mbps streams from HDD

Special purpose IPTV streamers and tools (C++)

Management tools (C++, Python, Perl, Shell, SQL)

Media acquisition system: encoder (using GStreamer), encoding workflow management (Python, Django)

Application server (J2EE, Hibernate, Spring)

*Responsibilities:*

Supervising team of cca. 5 developers over 4 years

Development in C/C++, Java (J2EE), Python

Formal system analysis

Ensuring whole Nangu<sup>TV</sup> platform design and integrity

Solving critical situations

Interaction with customers and partners

### August–September 2001, Komerční Banka Praha

Major Czech bank <http://www.kb.cz/>

*Position:* Middle Office, department of reconciliation

## Language skills

Czech (native speaker), English, German

## Computer skills

Experience with a large project analysis

Ability to write a high quality code (adhere to the given performance constraints, good readability/structure, low bug ratio)

Experience with heavily multi-threaded programming

Ability to learn fast and comprehend large systems

Good knowledge of *C*, *C++*, *Java*, *Python*

Experience with *Perl*, *Shell scripting*, *SQL*, *XML*...

## Other interests

Hierarchical self-learning systems. Brain and mind theory. Karate-do. Hiking.

## Interesting non-commercial software projects

These projects were developed mostly during my studies in my spare-time. The source code is freely available. Note that the source code does not necessarily represent the quality of my current commercial projects.

### **Representative sample of my C++ code** for job interview purposes:

Solution to the Facebook engineering puzzle “Small World”

Demonstrate the quality of my recent software without compromising intellectual properties of my employers

300 non-commentary lines of code in C++, 800 total LOC

<http://download.wonderland.cz/smallworld.tgz>

Year: 2009

### **Rewrite of the engine for *The Lord of the Rings* computer game** (Interplay, 1990, 1993):

reverse engineering of the original data files (2 different compression algorithms, one video format)

reverse engineering and implementation of two different scripting languages

additional Python scripting support

21000+ lines of code in C, 700+ LOC in Python

<http://www.wonderland.cz/lotr/>

Years: 2003–2009

### **System for management of Karate-do tournaments** (JKA rules) called *Tatami*:

web-based application written using Django framework

4000+ lines of code in Python

<http://www.wonderland.cz/tatami/>

Years: 2008–2009

### **E-learning platform *Tulka Whiteboard*:**

server-client architecture, nearly 7000 lines of code (LOC) in Java, 700+ LOC Perl, 700+ LOC Shell, developed for the Virtugrade project (Tübingen)

<http://www.karlin.mff.cuni.cz/~benes/tulka/>

Years: 2000–2002

### **J2ME experience:**

A Java game for the Siemens C55 mobile phone

2000+ LOC of heavily optimized Java code

Years: 2003

### **Various contributions to GStreamer framework** related to Nangu<sup>TV</sup> platform

Initial design of a base class for muxers with sparse streams `gstcollectpads2`

<http://gstreamer.freedesktop.org/>

Years: 2005–2007