



Aleš PEJZNOCH
Software Engineer

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Introduction

Hi, I am software engineer with experience in programming and algorithm design, writing to apply for the developer position. I am very excited to learn more about this opportunity. I believe that my long-term experience in programming and bioinformatics would be an asset to your company. I enjoy solving complex problems and using my creativity to find the best possible solutions.

I currently work at Yourgene Health as Senior Bioinformatics Developer.

I have recently worked on scientific project in the field of systems biology. I have already spent one year year in Ireland as C++/Qt Developer of multithreaded advertising platform. I worked on a modular multi-process high-performance video and audio live transcoder.

I can start work immediately. I am looking forward to your reply.

Sincerely,
Aleš Pejznoch
Manchester

Experience

Current Role **Senior Bioinformatics Developer**, *Yourgene Health*, Manchester, United Kingdom

Nov 2019 to Sep 2022 **Bioinformatics Developer**, *Yourgene Health*, Manchester, United Kingdom

Context: Part of R&D. Worked on multiple projects in a cooperation with different teams (innovation, laboratory, support, quality) and external customers.

- Followed all the phases of the IVD Design and Development process, up to and including Software Release.
- Created documents and presentations related to the software development plan.
- Managed Software Verification and Validation processes.
- Prepared and led job interviews and code reviews.
- Experience with Windows 10 IoT Customization Setup Tools.
- Managed Linux servers (automation, backups, developer tools configurations, upgrades).

Skills: Statistics and data visualizations. Software architecture. SCRUM, Python, C#, C++, Java, Spring, R, SQL.

Jan 2018 to Dec 2018 **Software Engineer**, *Laboratory of Systems Biology, FI MU*, Brno, Czechia

Context: The first Faculty of Informatics founded in the Czech Republic. Today, with a steady increase of interest to study, it provides Computer Science education at all levels of university studies for two thousand students.

Project:  Parasim is systems biology tool for analysis developed in cooperation with FI MU. Given an ODE model, a property and perturbation set, it computes the robustness of the model over the perturbation set with respect to the property.

Tasks: • Reimplemented LSODA and removed previous solution using Octave • Improved performance • Used Java bindings for C++ library • Implemented new visualizations • Invented new ideas (kriging)

Skills: C++14, Java, JNI, git, gcc, POSIX, Gradle

- Jan 2017 to Sep 2017 **Software Engineer, Comprimato, Brno, Czechia**
Context: Comprimato is a video compression and processing technologies provider offering next-generation products for professional broadcasting and video editing.
Project: Designed and implemented modular high-performance video and audio live transcoder. Modular inter-process communication was achieved using pipes, signals and shared memory. This project became the main focus of the company.
Tasks: • Developing transcoder from scratch • Testing transcoding pipeline • Implementing transcoder file configuration, JSON parsers and logging systems • Main features – process communication, video pipeline management, multithreaded design
Skills: C++14, CUDA, CMake, QT Creator, gcc, VS, valgrind, Network Standards
- December 2015 to October 2016 **C++ Developer of Advertising Platform, Chameleon Ad, Dublin, Ireland**
Context: Chameleon is a specialist Native Advertising software company offering a Native Advertising SaaS platform plus Ad Server to media companies to allow them directly sell, deliver and manage their own Native ad formats and campaigns.
Project: Developed a heavily optimized multithreaded server. Designed a scalable SQL database cache. Implemented Python and Perl scripts.
Tasks: • Codesigned multithreaded server from scratch • Working with multiple languages • Designed new features – server monitoring, automatization • Implemented main features • Optimisation and code improvement • Unit testing, Forward testing
Skills: C++, PHP, SQL, Python, Perl, Bash, gdb, gcc, Qt, valgrind
- September 2013 to May 2015 **Software Engineer, Laboratory of Systems Biology, FI MU, Brno, Czechia**
 Funded student project. Developed [BioDiVinE 1.5](#), a tool for formal analysis of dynamical systems. Refactored input framework and unified input language. Implemented parser and extended overall implementation.
- Summer 2013 **Research Worker, Central European Institute of Technology, Brno, Czechia**
 Created experimental data for sequence realignment.
- Spring 2012 to Autumn 2013 **PHP/SQL Web Developer, Laboratory of Systems Biology, FI MU, Brno, Czechia**
 Worked on [e-cyanobacterium.org](#). Designed and implemented modules for time course simulation and static analysis of models.

Education

Alma mater **Faculty of Informatics at Masaryk University, Brno, Czechia**

- 2012 to 2015 **Master of Science in Bioinformatics**
Master's thesis Parameter Synthesis for Sigmoid Kinetic Models | *C++*, *cross-platform*, *refactoring*
- 2009 to 2012 **Bachelor of Science in Bioinformatics**
Thesis Static and dynamic analysis module for [e-photosynthesis.org](#) | *PHP*, *MySQL*
Publication M. Klement, D. Šafránek, T. Děd, **A. Pejznoch**, L. Nedbal, R. Steuer, J. Červený, S. Mueller. A Comprehensive Web-based Platform For Domain-specific Biological Models. *Proceedings of the fourth International Workshop on Interactions between Computer Science and Biology*. Elsevier, 2013, p. 61-67. doi:10.1016/j.entcs.2013.11.006
- 2008 to 2012 **Bachelor of Science in Computer Graphics and Image Processing**
Thesis Fuzzy Thresholding | *C++*, *digital image processing*

Selected Courses

IV003, Algorithms and Data Structures II
PV189, Mathematics for Computer Graphics
PV056, UNIX – Advanced Course
PB161, C++ Programming
PA159, Net-Centric Computing

Individual Projects

2018 **Parasim**

A tool for robustness analysis developed in cooperation with Laboratory of Systems Biology. Given an ODE model, a property and perturbation set, it computes the robustness of the model over the perturbation set with respect to the property.

2018 **LsodaCpp**

Fast C++ implementation of Livermore Solver for Ordinary Differential Equations (LSODA).

2016 **Super Cache**

Thread safe cache written in C++ with BOOST/PYTHON bindings.

 **Iterated Functions System Editor** | C++, OpenGL, ATL

Algorithm for computing uniform multi-resolution pointshells | C++

 **Haskell vector graphics editor** | Winhugs, HGL

Certification

2017  **Computational Neuroscience**, *University of Washington on Coursera* Certificate earned at Friday, December 15, 2017 9:55 PM GMT

Computer Skills

Languages C/C++17, C#, Java, Python, R, SQL, LATEX, Bash and limited knowledge of Haskell

Libraries Spring Framework, .NET, POSIX, Qt, OpenGL, Win API, ATL, JNI

Software Git, Perforce, GCC, GDB(pwndbg), Neovim, Valgrind, qmake, CMake, UNIX development toolchain, Qt Creator, MS Visual Studio, IntelliJ IDEA, VisualVM, GRADLE, VirtualBox, Octave/Matlab, Copasi

Other skills Agile development, SCRUM, Algorithmics, Systems design, Research, Backend, Bioinformatics, Systems biology, Machine learning - linear regression, logistic regression, classification trees, neural networks, k-means clustering, dimensionality reduction