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C++ developer

Maxime Pinard

Computer enthusiast, I work as a C++ developer at IT-Finance

Education and qualifications

Université du Québec à Chicoutimi — **Saguenay, Quebec, Canada**
Master in computer science (double degree with UTBM)
2018 – 2020

Université de Technologie de Belfort-Montbéliard — **Belfort, France**
Computer science engineer diploma, imaging specialty, (eq. Master of Science)
2016 – 2020

Université de Technologie de Belfort-Montbéliard — **Sèvenans, France**
University degree in technology
2014 – 2016

Lycée Louis Aragon (high school) — **Héricourt, France**
Baccalauréat with major in maths, with honours
2011 – 2014

Languages

French: Native language
English: Professional working level
Spanish: Moderate level
Japanese: Basic level

Computer skills

Languages: C++, C, Java, LaTeX/TikZ, Python, Bash, CUDA, SQL, HTML/CSS, Assembly...
Methods/Tools: Agile, Unit tests, Design patterns, UML, BPMN, git, CMake, Make, Clang Tools, Maven, Regex
Metaheuristics: Tabu search, simulated annealing, genetic algorithms, ant colony optimization algorithms, PSO
Libraries: boost, fmt, spdlog, OpenGL, OpenCL, OpenMP, MPI, GTest, Catch2, Capstone, Keystone, Json, SFML, ImGui, GLFW, GLM, libmpg123, TagLib, cxxopts, inja, JavaFx, JUnit4
System administration: GNU/Linux (Debian 8+), personal server for Java EE and Docker web services hosting
IDE: Visual Studio 2017/2019, CLion, IntelliJ IDEA

Work experiences

IT-Finance — **Wasquehal, France**
C++ *developer, Development, optimization and maintenance of trading systems*
2020

Institut de Recherche en Informatique, Mathématiques, Automatique et Signal, 6 months — **Mulhouse, France**
Research and software developement intern
09/2019 - 02/2020

- Development of memetic hybrid metaheuristics for the Set Cover Problem and C++ high performance implementation
- Benchmark on the HPC cluster of the Strasbourg méso-centre and submission to 2 conferences [1]

Ambulances Phoenix, 4 months — **Héricourt, France**
Ambulance technician, Patient care and transportation
07-08/2018, 07-08/2019

Direction Générale de l'Armement Maîtrise de l'Information, 6 months — **Bruz, France**
Software developement intern
08/2017 - 01/2018

- Work on GenDbg, a multi languages, OS and architectures debugger:
  Development in C of a disassembly module for MIPS architectures and the associated unit tests
- Work on YaCo, an IDA Pro plugin enabling collaborative reverse-engineering using Git:
  Ported to C++ and improved Git repository management and IDA events handling

JAB France, 1 week — **Evolène, Switzerland**
Activities supervisor, Camp of 40 young people, team of 15 supervisor
02/2016

JAB France, 1 week — **Contamines, France**
Activities supervisor, Camp of 50 young people, team of 20 supervisor
02/2015

Souchier SAS, 4 weeks — **Héricourt, France**
Intern, Installation of gaskets and assembly of smoke evacuation systems
01/2015

Others qualifications

- French driving license
- PSC1, *French first aid certification*

Projects

Personal

- Header-only dynamic bitset implementation and unit tests [C++, Catch2] — *dynamic_bitset*
- Music player [C++, ImGui, SFML, spdlog, libmpg123] — *MagicPlayer*
- Utility functions to configure C/C++ projects (clang-format, ccache, sanitizers,...) [CMake] — *CMutils*
- Number base converter, example ImGui/SFML [C++, ImGui, SFML] — *BaseConverter*
- Console graphical library for Windows and Unix based systems [C] — *ConsoleControl*
- Dungeon crawler with procedural levels generation [Java, JavaFx] — *Raoul-the-Game*
- LaTeX/Ti*k*Z implementation of the UTBM internship report covers — *utbm-latex-internship-report-covers*
- LaTeX/Ti*k*Z Beamer implementation of the UTBM presentation theme — *utbm-beamer-theme*
- Multiplayer Snake like game (local network) [C++, SFML] — *PapraGame*

Research

- Hyperplanes calculator in dimension 4 finite geometries, (performance oriented) [C++] [2] — *HyperplaneFinder*

Internship

- Program for solving the Set Cover Problem [C++, dynamic_bitset, spglog, json, cxxopts] [1] — *USCP, Internship report (fr)*
- Program for processing Set Cover Problem results [C++, spglog, json, cxxopts, inja] [1] — *USCP, Internship report (fr)*
- Hex-Rays IDA collaborative reverse-engineering plugin [C++, GTest, IDA] — *YaCo, Internship report (fr)*
- Assembly / disassembly module for MIPS processors assembly code [C, Capstone, Keystone, GTest] — *Internship report (fr)*

Universities

- Algorithms for solving the Set Cover Problem [C++, spdlog, dynamic_bitset] — *Set_cover_problem*
  > Exhaustive search, Greedy, Branch and Bound, Simulated Annealing, Genetic and Memetic Algorithm
- Construction and render of a 3D parametric object with OpenGL [C++, GLFW, ImGui] — *ParametricObjectsConstruction*
- MiniMetro clone: subway management simulator [Java, JavaFx] — *MagicMetro*
- Pogo game with MinMax/AlphaBeta AI [C++, ConsoleControl] — *Pogo*
- Multi-users file storage server [C++, SFML]

Publications

[1] M. Pinard, L. Moalic, M. Brévilliers, J. Lepagnot, and L. Idoumghar, "A memetic approach for the unicost set covering problem," in *Learning and Intelligent Optimization*, Proceedings of the 14th Learning and Intelligent Optimization Conference (May 24–28, 2020), Athens: Springer International Publishing, Jul. 18, 2020, pp. 233–248. DOI: 10.1007/978-3-030-53552-0_23, code used available online.

[2] J. Boulmier, F. Holweck, M. Pinard, and M. Saniga, "Veldkamp spaces of low-dimensional ternary segre varieties," *Results in Mathematics*, vol. 74, no. 1, p. 54, Feb. 13, 2019, ISSN: 1420-9012. DOI: 10.1007/s00025-019-0974-2, code used available online.

Interests

Computer science: Processor architecture, procedural generation, operational research, software optimization, cryptography, security and the evolution of quantum computing.

Science: Mathematics, physical system simulation, quantum physics...

Sport: Skiing and winter sports, cycling, mountain hiking, swimming (3h a week).