

Sylvain Henry

Curriculum vitae

EDUCATION

- 2009 – 2013 **Doctor of Philosophy**
University of Bordeaux
- Ph.D. in Computer Sciences. Research topic: "Programming Models and Runtime Systems for Many-Core and Heterogeneous Architectures".*
- 2006 – 2009 **Computer engineer**
HIGH SCHOOL DIPLOMA
ENSEIRB-MATMECA
- High-performance computing (HPC) specialization.*
- 2004 – 2006 **Classe préparatoire aux grandes écoles**
Lycée Camille Guérin, Poitiers
- French preparatory classes for high-school. MPSI and MP* sections (Mathematics, Physics).*
- 2001 – 2004 **Baccalauréat**
Lycée Pilote Innovant (Futuroscope), Jaunay-Clan
- French baccalauréat S (scientific) with mention ("Bien"), equivalent to A levels.*

SOFTWARE SKILLS

Programming models and languages

- Good knowledge of programming paradigms and models (functional, imperative, object-oriented...)
- From system programming to high-level programming
- Expertise with several languages, mainly Haskell, C, Scala, x86 assembly.
- Past experience with: Java, Ruby, D, C++, OCaml, Delphi/Pascal, Lisp, PHP, Lua, SQL...

Parallel Computing

- Good knowledge of the different programming models for parallel architectures
- Experience with the following technologies: OpenCL, CUDA, MPI, OpenMP...

Computer Architectures


- Good knowledge of several computer architectures (low-level concerns)
- From simple Von Neumann architectures to many-core and heterogeneous architectures

Various

- VCS (GIT, SVN), \LaTeX ...

 7 route des Chaumes,
86340 Roches Prémarié (France)

 +33 6 70 94 86 76

 Birthday: March 14, 1986

 hsyl20@gmail.com

 www.sylvain-henry.info

DEVELOPMENT EXPERIENCE

2015 – PRESENT

Hacking on the GHC compiler on my free time

C, Haskell

- Enhancements and fixes for the runtime system: fix support of static binaries in restricted environments (e.g. initramfs); enhanced memory allocator for the RTS linker; better ticker for the RTS on Linux.

—
JANUARY 2014 – DECEMBER 2015

Postdoc at Intel Exascale Computing Research Lab - Versailles

C, Lua, x86-64, Haskell

- Value profiling module in C and Lua for MAQAO (Modular Assembly Quality Analyzer and Optimizer): use binary instrumentation (x86.64 ISA) to characterize loops (e.g. cycles per iteration) and function calls (e.g. detect specialization or memoization opportunities).
- Haskell interface for MAQAO and HappStack based Web interface to navigate into disassembled binary files.

—
SEPTEMBER 2009 – NOVEMBER 2013

PhD at Inria Bordeaux

Assistant professor at ENSEIRB

C, OpenCL, Haskell

- OpenCL implementation (in C) called SOCL on top of the StarPU runtime system (runtime system written in C for heterogeneous architectures), now included into StarPU's distribution.
- Prototype front-end for StarPU using implicit parallel functional programming to create task graphs (in Haskell).
- Runtime system prototype in Haskell for heterogeneous architectures (independent of StarPU): ViperVM, presented at FHPC'13 workshop.

FEBRUARY 2009 – AUGUST 2009

Internship at Thales Avionics

C, IBM CELL/BE

- Adaptation of a low-level high-performance communication middle-ware used in radars to the IBM CELL/BE processor – development in C on a cluster composed of 8 PlayStation 3 (using YellowDog Linux OS).

—

JUNE 2008 – AUGUST 2008

Internship at MediaLog

Delphi 5, FireBird SGBD

- Optimizations for a client-server medical application (in Delphi 5): stored procedures for FireBird, etc.
- Implementation of a mechanism to ensure coherency of a patient form in the case of concurrent modifications.

—

JULY 2007

Internship at AEI

PHP, SyncML

- Development of a contact synchronization module – using SyncML and PHP – for Vtiger CRM (Customer Relationship Management software).

PERSONAL PROJECTS

ViperVM (vipervm.org)

Framework for system programming in Haskell on x86-64 architecture and Linux: native support for system formats (ELF, dwarf, cpio); fast syscall wrappers; interface for some Linux subsystems (DRM, input).

Dynamic Linker Template (on Hackage)

A module that uses Template Haskell to generate from the field names and types of a Haskell data type the code to dynamically load function pointers from a native library (using the Foreign Function Interface). Library symbols are matched with field names. Optional symbols are supported (fields with Maybe type).

EFL Bindings (github.com/hsyl20/graphics-efl)

Haskell bindings for the Enlightenment Foundation Libraries (EFL).

SunBurn (github.com/hsyl20/SunBurn)

Basic ray-tracer prototype (in Scala) providing several sampling methods and a DSL à-la POV-Ray, inspired from the book "Ray-tracing from the Ground Up" (Kevin Suffern).

COMMUNICATION SKILLS

FRENCH	Native speaker
ENGLISH	Fluent
GERMAN, SPANISH, JAPANESE	Notions

TEACHING EXPERIENCE

2012 – 2013 **TCP/IP Networking**
ENSEIRB-MATMECA
Course (27 hours) – Info (year 2)

GPGPU Programming
ENSEIRB-MATMECA
Course (8 hours) – Practical sessions (8 hours) – Info (year 3)

Compilation
ENSEIRB-MATMECA
Practical sessions (16 hours) – Info (year 2)

2011 – 2012 **System & Networking**
ENSEIRB-MATMECA
Project (32h) – Info (year 2)

Development of a "mpirun"-like application launcher with additional distributed shared memory support

Functional programming
ENSEIRB-MATMECA
Project (30h) – Info (year 1)

Supervision of a functional programming project using Lisp: automatic solver for a "minesweeper" game

Initiation to Unix, Bash, C
ENSEIRB-MATMECA
Practical sessions (8 hours) – Élec (year 1)

2010 – 2011 **C, OS (Linux), STM**
ENSEIRB-MATMECA
Project (64h) – Telecom (year 2)

Creation and supervision of a project associated to an OS-system programming course. Students had to develop a software transactional memory (STM) module for Linux. Testing was done using root privileges in a virtual QEMU system.

HOBBIES

MUSIC	Playing drums and guitar
SPORTS	Bike, badminton, running
READING	Many kinds, mostly non-fiction