OLIVIER BRUCHEZ

Software Engineer / Scala Developer

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# PROFESSIONAL EXPERIENCE

## Software engineer | Orbeon | May 2023 - present

Contributing to the development and maintenance of Orbeon Forms, enhancing the product by adding new features tailored to customer requirements.

## Software engineer | Cultural Heritage & Innovation Center, EPFL | May 2012 - present

Contributing to various research projects by developing and maintaining software solutions, with a focus on digital asset management (DAM), distributed algorithms, and data integration.

Some specific projects I've worked on include:

* Digital asset management system for Montreux Jazz Digital Project **(Scala, Play, Akka, Slick, S3, Lift)**
* Prototype for a distributed algorithm execution platform for musicology datasets **(Akka, Docker)**
* Ingestion solution for the Claude Nicollier archive **(Akka, Slick, SQLite, S3, Google APIs, Archivematica)**
* REST API for iPad/web applications (metadata and audio/video streaming) **(Akka HTTP, Elasticsearch)**
* Integration of our artist/person database with Wikidata **(SPARQL, open linked data)**
* Artist contracts / music rights management and search
* Photo import tool using fuzzy string searching
* Integration with a smart playlist generator
* Various import/export and integrity check tools
* Various audio/video compression/processing tools (ffmpeg, custom algorithms, etc.)
* Integration of various algorithms (perceptual hashes, affinity propagation clustering, tree pruning, etc.)

## Software engineer | E-mmunizer / Groowin | Aug. 2011 - Mar. 2012

Added features to an online commerce platform for local businesses **(Scala, Lift, Cassandra, PostgreSQL, S3)**

## Software engineer / consultant | ELCA Informatique | Sep. 2009 - Jul. 2011

* Maintained an unforgeable code printing library and a printer-agnostic layout editor **(Python, C#, C++)**
* Developed a web application to allow multiple teams to synchronize their activities during the deployment of a release into the production environment **(Java, GWT)**
* Partially rewrote a risk management (fraud detection) module developed by an intern **(C++, SQL)**
* Developed and maintained online/high-availability and offline electronic payment applications using Scrum, UML, and test-driven development (TDD) **(Java, C++, SQL)**

## Software engineer / consultant | Self-employed | Jul. 2008 - Aug. 2009

* Added client/server APIs to an existing web application **(Orbeon Forms, XForms, Java)**
* Added features to a network audit reports management application **(Orbeon Forms, XForms, XQuery, XSLT, eXist)**
* Developed an application to launch E-Prime psychology tests and analyze results **(C++, data analysis)**

## Software engineer | VisioWave / GE Security | Apr. 2002 - Jun. 2008

Developed and maintained the company cross-platform software (core services and SDK) for real-time acquisition, transmission, storage, and retrieval of digital audio/video streams for security applications. Worked on more than 30 releases, service packs, and hotfixes. Fixed hundreds of customer/QA-reported bugs.

* Designed and implemented a hardware-agnostic XML-based health monitoring framework
* Tested and maintained an H.264 codec (rate control and entropy coding modules)
* Developed a video rendering component using pixel shaders for deinterlacing and color conversion
* Designed and implemented a distributed alarm/event management system
* Developed a timeline component (GUI) for video/audio storage display/playback

# SOFTWARE SKILLS

**Languages Scala**, Java, JavaScript, Python, C/C++, PHP, C#, XQuery, XSLT **Frameworks Play, Akka, Slick**, Elasticsearch, Archivematica, Orbeon Forms **Databases** PostgreSQL, MySQL, SQLite, Cassandra, Neo4j

**Dev. tools** Git, IntelliJ, SBT, Eclipse, Maven

**General** Backend/frontend development, audio/video, digital preservation, functional programming (FP), object-oriented programming (OOP), distributed/real-time programming, machine learning

# BOOKS/COURSES

Mar. 2017 “Big Data Analysis with Scala and Spark”, by Heather Miller #mooc

Oct. 2016 “Parallel programming” (Scala), by Viktor Kuncak & Aleksandar Prokopec #mooc Dec. 2015 “Functional Programming in Scala”, by Paul Chiusano & Rúnar Bjarnason #book

May 2014

Feb. 2014

“Machine Learning”, by Andrew Ng #mooc

“Play for Scala”, by Peter Hilton, Erik Bakker & Francisco Canedo #book

Dec. 2013 “Principles of Reactive Programming”, by Erik Meijer, Martin Odersky & Roland Kuhn #mooc Dec. 2013 “Scala in Depth”, by Joshua D. Suereth #book

# OTHER/PERSONAL PROJECTS

2000 - present KeithJarrett.org, an unofficial website about jazz pianist Keith Jarrett

2002 - 2010 Database for Civil Protection / Protection of Cultural Property organization

2000 Self-learning Connect Four software using neural networks and reinforcement learning

# EDUCATION

1997 - 2002 **Master of Science in Computer Science (MS/CS)**

EPFL, Swiss Federal Institute of Technology, Lausanne, Switzerland

**Optional courses**: artificial intelligence (AI), artificial neural networks (ANN), bioinformatics, computer graphics, document engineering, natural language processing, pattern recognition, virtual environments

**Projects**: distributed video archival and streaming system using CD/DVD jukeboxes, utility for converting between ICC profiles and XML, exploration of new types of Turing neural network, control software for an MC68331-based mobile robot, DNA sequence classification using artificial neural networks **(C/C++, Java, Lisp, assembly language, distributed computing, machine learning, evolutionary algorithms)**

1992 - 1997 **Scientific Matura**

Collège de l'Abbaye de Saint-Maurice, Switzerland

# LANGUAGE SKILLS

French (mother tongue), English (fluent), German (basic knowledge)

# HOBBIES/INTERESTS

Mountain hiking, running, music (jazz and more), reading, blogging, traveling, going to the museum / theater / opera, meditation, science/math, technology, astronomy, futurology, life extension / longevity, philosophy, Getting Things Done (GTD)