

Christof Donat

„Fearless when facing complex challenges“

(Roland Bock, PPRO)

- ★★★★★ over 40 years of programming
- ★★★★★ over 35 years of C
- ★★★★★ over 30 years of C++
- ★★★★★ over 25 years of web development
- ★★★★★ over 20 years of cloud computing
- ★★★★★ over 15 years of microservices
- ★★★★★ over 10 years of Python
- ★★★★★ over 5 years of quantitative computing
- ★★★★★ **always up to date**

Born 9th of March 1973
Two daughters, born 1997 and 1999

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Switzerland

CV

- 05/19 - 01/24 Contractor at Credit Suisse
Senior Quantitative Python Developer
- 02/19 - 04/19 Avelon Cetex AG
Senior Linux C++ Developer for Embedded Systems
- 06/13 - 01/19 PPro Ltd
Senior Software Developer/Senior BI Developer
- 10/12 - 05/13 Adfinis Sygroup AG
Senior Software Developer
- 09/09 - 07/12 SIX Telekurs Ltd
Senior Software Developer
- 11/07 - 11/08 Netzathleten GmbH
Software Developer
- 04/06 - 06/16 actSoft GmbH; later okunah GmbH
Founder and CEO
- 09/04 - 09/09 eg.media GmbH
Lead Developer/DevOps
- 08/03 - 02/04 albsys GmbH
Lead Developer
- 08/02 - 04/03 Kratzer Automation AG
Software Developer
- 01/02 - 07/02 ComROAD AG
Software Developer
- 01/00 - 12/01 Met@box AG/Met@TV AG
Team Lead
- 01/98 - 06/99 Schwäbische Zeitung Online
Student Assistant
- 10/94 - 09/97 various positions as student assistant
– DETA Akkumulatorenwerke
– Institute of Mine Surveying at TU-Clausthal
– Institute of Mechanical Engineering at TU-Clausthal

Education

- since 06/24 Harvard University profesional program
Artificial Intelligence with Python
- 10/97 - 12/99 University Ulm
Student of Mathematics and Computer Science
- 10/95 - 09/97 Clausthal University of Technology
Student of Mathematics and Computer Science
- 07/94 Rudolf-Diesel-Gymnasium Augsburg
University Entrance Diploma

Skill Matrix

Programming

Linux	★★★★★
Python	★★★★★
Python 3	★★★★★
FastAPI	★★★★★
CVXpy	★★★★★
Django	★★★★
NumPy	★★★★
Pandas	★★★★
SciPy	★★★
C++	★★★★★
C++11 - C++23	★★★★★
C++03	★★★★
POSIX	★★★★
STL	★★★★
Boost	★★★★
Qt	★★
Database	★★★★★
SQL	★★★★★
PostgreSQL	★★★★★
Data Warehouse	★★★★★
Column Store	★★★★
MySQL	★★★★
NoSQL	★★★
Web Development	★★★★★
Webservices	★★★★★
Websockets	★★★★
JavaScript	★★★★
WASM	★★★
CSS	★★★
HTML	★★

Tools

Git	★★★★★
CMake	★★★★
GNU make	★★★★
Kubernetes	★★★★
OpenShift	★★★★
GitLab	★★★★
NextCloud	★★★★
AWS	★★
Azure	★★
Jira	★★

Protocols

TCP/IP	★★★★★
HTTP	★★★★★
IP Multicast	★★★★★
TLS	★★★★
FIX	★★★★
Apache Kafka	★★★
MQTT	★★★
SMTP	★★★
Matrix	★★
XMPP	★★

Technologies

Cloud	★★★★★
GPS	★★★★
Machine Learning	★★★
CEPH	★★
Home Automation	★★

Processes

Agile	★★★★★
Scrum	★★★★★
Pair Programming	★★★★★
XP	★★★★

Industry Experience

Banking / Financial Services
Software / IT
Automotive / Logistics

Consumer Electronics
Online Media
Automation

Project List - A Selection

Wealth Management at Credit Suisse

Many Credit Suisse customers, ask for advice for their wealth management. To support them we have developed a portfolio optimization system, that uses mathematical optimizations with high dimensional functions to determine an optimal investment strategy.

Python	★★★★★
CVXpy	★★★★★
numPy	★★★★★
FastAPI	★★★★★
Microservices	★★★★★
OpenShift	★★★★★

We have developed a microservice system for reliability and scalability. I've been responsible for some of the more mathematically challenging quantitative computing services, as well as for the framework, and deployment infrastructure for those service, that were written in Python.

The project was successfully delivered.

BI system at PPRO

PPRO had a lot of data spread over several systems, and aspired to analyse it, in order to improve it's marketing and product development decisions.

PostgreSQL	★★★★★
Azkaban	★★★★★
Pentahoo Kettle	★★★★★
Tableau	★★★★★

We set up a data warehouse in PostgreSQL, because PostgreSQL allows to leverage remote tables from other database systems like e.g. Cassandra. Therefore it allowed for a smooth transition when in future PostgreSQL wasn't sufficient any more. For scheduling we decided to use Azkaban, and the collection of data from all the systems was done with Pentahoo Kettle.

The database had three schemata: a staging area, the data warehouse itself, and several data marts. With that setup we were able to feed Tableau Dashboards for decision support, and allow the data scientists to run their data mining without disturbing the production processes.

The BI system as a data driven decision support tool, was highly regarded by the management.

Sanction management at PPRO

As financial institution, PPRO is obliged to obey the sanction regimes in all jurisdictions, it is operating in. The authorities distribute the list of

Python	★★★★★
XML	★★★★★
MySQL	★★★★★

sanctioned people as XML files, which contain the sometimes sparse information available, to identify sanctioned persons, or organizations.

In this project I developed not only the import and update of these sanction lists, but also the matching of customer requests to entries on these lists. The result was a risk score, which reflected the probability, that the customer might match an entry on one of the lists. With that risk score, the system either decided to allow, or deny the customer, or to delegate the decision to a human in unclear cases.

The system was applied to every new customer, and regularly to the whole customer base. For the customer base, we already had a list of human decision, so that we didn't have to flag them again, and have a human staff member decide again.

With this decision support system PPRO was able to reduce the work load on the staff, while at the same time reduce the risk of failing to comply with the sanction regimes.

Direct Debit Payment System at PPRO

PPRO decided to develop a payment service for the German market to complete their portfolio. The idea was, that the user would enter his login for his online banking, and then the service would trigger a transaction to the shop. Since the service could view historical transactions, we were able to tell the shop, if he can be sure, that the money is coming, or if he should wait for it to arrive on his account.

Python	★★★★★
Flask	★★★★★
BeautifulSoup	★★★★★

We analysed the online banking systems of the biggest banks, banking conglomerates, and online banking providers for small banks. That was enough to cover over 90% of all German bank customers.

By implementing this system in short time, we were able to improve PPROs position in the market significantly.

Big Data Low Latency Complex Event Processing System at SIX Telekurs

SIX Telekurs (now SIX Financial Information) is one of only a few companies, that can provide marked data from almost every exchange around the world to customers in a standardized format with low latency. The goal of this project was, to replace the central market data processing system with a decentralised one, for even lower latency.

C++	★★★★★
Template Metaprogramming	★★★★★
NUMA aware	★★★★★
Lock Free	★★★★★
Linux	★★★★★
Reliable IP Multicast	★★★★★
Parser Generators	★★★★★

We were able to leverage the domain specific language for parser generators from the existing system. These parsers had to interpret the different stream formats from the different exchanges, and therefore there were several hundred of them implemented.

Based on that we developed an asynchronous system, that used a reliable multicast protocol (LBM by 29West) for hot failover as well as for delivery to the customer. We had to program very close to the bare metal, considering aspects like the NUMA structure, memory layout and cache strategies, and user space direct network card access to reduce the number of context switches. We basically took over most of the machine from the operating system with CPU binding and CPU shielding. The whole system was designed lock free to avoid any unnecessary latency, and handled issues, that were not part of the processing itself asynchronously. To give the compiler the best chances to optimize the code, we relied on modern C++ techniques, like template meta programming.

While I was on the project, we managed to successfully deploy a prototype to production.

References

In this section I've collected reference texts from my LinkedIn and Xing profile. For your convenience I've translated the German texts to English. Xing doesn't show the references any more.

Lutz Osterbrink, Quantitative Strategist, Credit Suisse

„Christof is a senior developer with a wealth of experience. His proficiency in Python has been pivotal for our projects. He has a good understanding of the bigger picture and helped shaped several important aspects, such as the design of our services. I am particularly grateful for his contribution to improve code quality, testing and help refining our dev ops.

Christof's amiable demeanor, willingness to assist others, and commitment to his principles made him a great addition to our team. He possesses a keen ability to provide constructive criticism, which contributes to the improvement of projects and fosters a positive working environment.“

Marcin Snarski, Senior Quantitative Developer, Credit Suisse

„I can highly recommend Christof as a Senior Software Engineer. He worked in our team on quantitative aspects of portfolio construction software (mainly in Python), but his skills and wealth of experience far exceed what a typical Python developer has to offer. At heart, Christof is a C++ expert, well versed in low-latency, performance critical software and Linux operating systems. Despite his "low-level" programming background, he easily adapts to all project requirements and can introduce quality "high-level" libraries when appropriate. I really enjoyed working with him, and many times I benefited from constructive criticism and advice he provided.“

Gabriela Rata, Team Lead C++, Avelon

„I am pleased to write this letter of recommendation for Christof Donat. As the Team Lead for Avelon Cetex, I worked closely with him.

Christof Donat demonstrated from early that he is an exceptional software engineer. Christof proved himself to have very good problem solving skills and a very solid C++ knowledge. He is up-to-date on the latest techniques in software development and is passionate about writing quality code.

In our team, he was the one caring the most about code quality and always finding and fixing issues just by reading the code. Also his code review was very meticulous and full of instructive comments for our junior team member. The younger member of our team considered him a mentor and felt that there is lot to learn from Christof. He was always glad to ask Christof for advice because he knew there is a lot he can learn from him and also because Christof proved himself very friendly and helpful.

Christof integrated in the team very quickly and started to help. His help was very valuable for me, at a time when I had a lot of work. The presence of Christof made a big difference. For example he took over and finished a project that I was working on, quickly and with very few explanations from my side. Also he helped my junior colleague with some important design decisions and gave him some very good advice for optimizations. He did this right from the beginning.

Also, Christof understands instructions quickly and is flexible when changes have to be made in the original plan.

I considered him a very valuable member of our team and I can't recommend him highly enough."

Roland Bock, Principal Software Engineer, PPRO

„Christof has a broad range of technical knowledge. In 2013 he joined the engineering team at PPRO because of his C++ and Python skills in particular.

He also has an impressive command of SQL and the ability to quickly comprehend code and data structures. This helped him especially when he took on his new role as technical lead of the newly shaped BI team in 2015.

Christof is fearless when facing complex challenges."

Susan Ruggles Nelson, Business Intelligence Team Lead, PPRO

„I had the pleasure of working with Christof at the PPRO organization. Christof is a talented and creative BI developer. He's especially adept at distilling complex technical topics into simple terms. Additionally, he's a team player who jumps at the chance to assist his colleagues in solving problems."

Jean-Louis Fuchs, Software Engineer, Adfinis-Sygroup

Original Words in German: „Christof Donat hat sehr gute technische Fähigkeiten und Knowhow. Er kann den ganzen Software-Entwicklungszyklus in einer hohen Qualität abdecken. Ich habe gerne mit Christof zusammengearbeitet.“

„Christof Donat is very much skilled in technical abilities and knowledge. He is able to cover the complete process of software development in high quality. I enjoyed collaboration with Christof."

Niklaus Aeschbacher, IT Project Manager, SIX Telekurs

Original Words in German: „Christof Donat war von Beginn an aktiv als Software Entwickler im Magellan Programm beteiligt. Er hat elementare Teile des neuen Marktdaten Verarbeitungssystem (MPP) entwickelt und mitgestaltet. Dies, in einem sehr dynamischen und Anspruchsvollen Umfeld, wo sich Ziele, Vorgaben und die Organisation zeitweise täglich änderten. Christof hatte stets eine klare Vision, nach der er sich in seiner täglichen Arbeit ausrichtete. Dank seinem hohen Innovationsvermögen und den außerordentlichen Sachkenntnissen war es möglich komplexe technologische Problemstellungen in wenigen Schritten

zu lösen und zu implementieren. Im Team war er ein kompetitiver Mitspieler, der seine Kollegen stets inhaltlich herausforderte, was eine kompromisslose und dennoch auf Qualität bedachte Zusammenarbeit ermöglichte.“

„Christof Donat has been an active part as software developer of the Magellan program. He developed and designed fundamental parts of the new market data processing system (MPP). He did that in an extraordinarily dynamical and demanding environment, with sometimes daily targets, requirements and organizational changes. Christof always maintained a clear vision as alignment of his daily work. Thanks to his high innovation potential and his extraordinary expertise he was able to solve and implement complex technological problems in a few steps. As team member he was a competitive teammate, who always challenged his colleagues in substance, which enabled an uncompromising, yet quality oriented cooperation.“

Rolf Schwab, Teamlead Software Development, SIX Telekurs

Original Words in German: „Überdurchschnittliches Fachwissen, arbeitet äußerst effizient und zielorientiert. Sehr angenehme, freundliche und offene Person.“

„Superior expertise, works extremely efficient and targeted. Very pleasant, friendly and open person.“

Viktor Paramonov, Senior Developer, SIX Telekurs

„Christof is a high-rated software engineer with very deep knowledge of C++ language and good communication skills.“

Dacian Herbei, Senior Developer, SIX Telekurs

„Extensive knowledge of programming with deep commitment in providing the best solution. Christof is a doer by excellence with emphasis on getting things done in agreed time scope. I can only testify about his knowledge in C++ programming in linux environment but I can only find reasons why any company would be proud to have him as employ or collaborator.“

Christian Dax, Software Engineer, SIX Telekurs

„I met Christof as a proficient C++ senior software developer at SIX Telekurs. As an extremely quick learner and rapid developer, he used to be one step ahead in designing and implementing our software application.

Thanks to all our fruitful discussions about high-performance issues and design principles in C++ programming, I learned a lot about the insights of C++. I enjoy his company when meeting him after work for a beer.“

François-Xavier Montero, Software Developer, ComROAD

„I have been very impressed by Christof's combination of managerial and technical skills, his breadth of industry experience and his ability to quickly come up to speed in situations with limited information

and hard deadlines. Works well under pressure, yet is able to maintain his sense of humor. Smart, insightful and easy to work with. An asset to any team. He is a highly skilled technical architect, with a keen ability to quickly identify the most challenging aspects of an application design, and the best approaches in tackling them. Very broad and deep knowledge of latest development technologies. I look forward working with Christof in the future.“

Peter White, Member of the Executive Board, Met@box AG

“Christof was one our most experienced software specialists at Met@box. He was very much in demand because of his analytical skills, creativity and ability to set targets and deliver great results when needed. I would recommend Christof any time, not just as a software engineer, but also as someone who makes the effort to glue a team together under stressful circumstances.”

Lukas Rasegi, Architect & Softwaredeveloper, Met@box

Original Words in German: „Ein super kreative Kopf. Eine technische Bereicherung und menschliche Unterstützung.“

„A super creative head. An enrichment in technologies and a humane support.“