Rolfe Bozier

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Summary

I have over 30 years of experience in software development and research.

Over my career, I have worked in areas as diverse as computer vision and audio search, embedded printing systems, search engine advertising, network security, geographic information systems, local government and manufacturing systems.

I have been heavily involved in all phases of the software development lifecycle: requirements analysis, research and design, coding, testing, release management, training and documentation, and support.

I am comfortable working at hands-on, team leader or management levels.

Employment History

ATOMOS **2019 - 2020**

Principal Research Engineer

I performed machine learning research and technology development for audio search applications in video production. In particular, I developed a multi-threaded C++ library for performing language-agnostic word searching and script alignment using phoneme matching. A feature of my work was that it would work well even on words it was not trained to recognise.

- I had sole responsibility for audio machine learning research and development at Atomos.
- I evaluated various deep learning architectures for audio-to-phoneme processing, collected data and trained deep learning networks using the wav2letter framework.
- I developed algorithms in C++ to perform noisy phoneme substring matching. This provided functionality to rapidly locate places where a word was mentioned in an audio track.
- I wrote code to provide accurate alignment of audio streams with corresponding text transcripts.
- I implemented the results of my research as a multi-threaded C++ library, suitable for incorporating in a user application being developed by another team.
- I also set up macOS/Linux build environments and release processes to help the AI team deploy prototype software.

My employment ended when Atomos shut down its AI research group due to the impact of Covid-19.

CANON INFORMATION SYSTEMS RESEARCH AUSTRALIA (CISRA) **2017 - 2019**

Principal Software Engineer / Team Leader – Computer Vision Research

I performed research into computer vision tasks, using deep learning networks. Specifically, I led small teams investigating two difficult computer vision problems: action recognition using synthetic video, and small object detection (< 30 pixels) under challenging imaging conditions.

- I developed tools to synthesise realistic video frames from motion capture data using Unity3D.
- I collected images for task-specific training and test data sets.
- I performed model training, modification and evaluation, principally using Caffe and Detectron frameworks. This included investigating internal model behaviour to better understand what features were being learned.
- I communicated with our partners in Canon Japan via video conferences, formal reports and in person.
- I obtained results that exceeded performance targets set at the beginning of the research activities. These targets included both time constraints and accuracy thresholds.

- I worked with small teams to develop skills and manage research activities.

CANON INFORMATION SYSTEMS RESEARCH AUSTRALIA (CISRA) **2009 - 2016**
Principal Software Engineer / Team Leader – Print Systems

I was the technical lead for the team that was developing the next-generation renderer for current and future Canon inkjet printers. As team leader, my role encompassed technical activities (design, development, test creation, bug investigation, software build and release processes), team development and management, task planning and tracking. I was the technical point of contact for my team both internally and also with our counterparts in Canon Japan. From the start of 2015, I also assumed responsibility for the quality evaluation of the renderer software.

As team leader, I managed the transition from research code to high quality integration-ready software that has been deployed in many Canon printers.

- I migrated the team to formal defect tracking and reporting using ClearQuest and then JIRA.
- I introduced formal review process for design documents, code and test plans, using SmartBear Collaborator.
- I enforced automated static code checking, with the result that analysis of the 600kLOC code base was warning-free under multiple tools.
- I was directly responsible for formal release planning and management for 4 successive annual releases to Canon.
- I managed the transition of staff into and out of the team while maintaining necessary skills coverage.
- I ensured the team performed appropriate IP creation and infringement checking activities.

I also achieved various technical results:

- I implemented the high-accuracy colorimetric (colour profile) processing in the rendering pipeline.
- I created a python test creation framework, with the result that we were able to develop tens of thousands of high-coverage test jobs (prior testing relied on a collected set of print jobs). As a result, the initial integration release of our software achieved zero reported defects from Canon.
- I reviewed hundreds of third-party patents for infringement checks, drafting reports where required.
- I drafted three US patent applications (two have now been granted - US9,779,064, US9,817,620).

I also organised lunchtime talks every few weeks or so to interested engineers about various aspects of software engineering, programming tools and process improvement. Over the last few years I have given around 25 presentations personally (https://github.com/rolfeb/cisra-talks).

24/7 REAL MEDIA **2004 – 2009**
Operations Manager / Senior Technical Analyst

Working largely in the DevOps space, I was the person with primary responsibility for the DNA search engine advertising production networks, built on a set of Linux servers residing in data centres in Sydney, California and Virginia. This encompassed software releases, performance investigation and management, maintaining up-time requirements, security management and capacity planning, and providing 2nd/3rd line support.

- I created and deployed a structured formal release process, replacing the original ad hoc updates to production software.
- I migrated in-house production systems to fully-supported data centre resident scalable environments.
- I designed software improvements that led to order-of-magnitude improvements in performance and responsiveness of batch processing jobs. This was done by analysing the processing workload and simulating a variety of scheduling schemes to find the best solution.

- I redesigned the main processing infrastructure to remove the scalability bottlenecks, allowing for continuing growth in the production systems.
- I trained operations staff in India and the US to provide 24×7 production systems support.

GENAWARE **2002 – 2004**
Development Manager

Responsible for all GIS software development and system administration. This role combined hands-on technical work with the management of 6 developers and 2 system administrators.

- I performed code maintenance in *GenaMap* core components (C, Fortran); generally worked on maintenance freeing up other developers to work on new functionality.
- I defined requirements, wrote design documents and test plans.
- I was responsible for hiring and skills development of technical staff; I built the technical team up from 3 to 8 staff.
- I rewrote the database-abstraction library to provide enhanced flexibility, reliability and performance.
- I rewrote map re-projection engine to support thousands of coordinate systems and datums in a number of different formats.
- I was responsible for 2 major on-time releases of *GenaMap* software.

Prior Experience

GLYNWOOD
Consultant / Contractor

- Open Telecommunications

  I was employed with the overall task of designing and implementing some desired improvements to the development environment, as used by over 100 developers.

- GenaWare

  GenaWare acquired the GIS business from Genasys II and continued to develop it. I was contracted to provide development, maintenance and support of the GIS software on a part-time basis.

- COSIRO

  COSIRO was a company based in Munich which provided sophisticated planning and management software for mobile telecomm operators in Europe. I spent two three-month periods working on site helping the company implement their required GIS image processing functionality and developing widgets for their initial Java UI.

- Sanderson

  I was employed to provide system administration and general technical expertise to their development and support teams.

  I also successfully recovered billing data from a corrupted Oracle database, allowing the company to invoice their customers for many months of work.

GENASYS II
Senior Developer

Genasys was an Australian company specialising in Local Government and Geographic Information Systems (GIS) software and solutions.

- In my time there, I had sole responsibility for the development of the image processing module. This included collection of requirements, design and coding of new functionality, testing and

maintenance.

- I also liaised with global support teams and customers. provided third-line support for other offices and wrote the user and training manuals.
- In 1996, I ported the entire GIS software suite to Linux, creating the world's first native GIS application for that operating system.

FGH DECISION SUPPORT SYSTEMS
Developer

- I developed and maintained the company's manufacturing module. This eventually comprised around 150k lines of C code on various UNIX platforms. I was solely responsible for programming, testing, documentation and dealing with customer support in this area.
- I also performed internal system administration and managed software quality.

Technologies

Languages:	Python, C, C++, Perl, SQL, HTML/CSS/JavaScript
Development:	Xcode, Visual Studio, Qt Creator, cmake/make/gcc, PyCharm
OS:	MacOS, Unix, Linux, Windows, embedded
Source control:	Git, Subversion, RCS, CVS
Databases:	MySQL, Oracle, sqlite
Architectures:	Intel, ARM, plus other processors at various times
Tools:	ClearQuest, Bugzilla, JIRA, Confluence, Buildbot, Nagios, Collaborator
Machine learning:	Computer vision, speech recognition, object detection, deep learning; using Caffe, Detectron, wav2letter frameworks