Personal Information

Name	Thys Meintjes
Occupation	Software Engineering and Architecture specialising in data fusion and computer vision
Phone	+61 419 222 404
Email	sthysel@gmail.com
Languages	English, Afrikaans
Citizenship	Australian

This CV is available online on github https://github.com/sthysel/cv, and may be more current than this document.

Overview

I am a software engineer with 20+ years of software architecture and engineering experience. I have worked in the weather aviation, national intelligence, healthcare, defense and mining industries. I have led development teams and managed and delivered projects at every level of the software development life-cycle: from conceptual design to delivery and support. I have worked in Agile teams as scrum master, tech lead, architect and developer.

I have worked on numerous sensor data fusion and solutions. I consider myself a integration and systems specialist, with strong

- Python
- Linux
- Machine Learning
- Containerisation
- IOT
- DevOps
- MLOps and
- Sensor data fusion pipe-line skills.

I have DevOps and MLOps experience using a variety of continuous integration, systems provisioning, software configuration and build management systems. These were implemented on-premise as well as various cloud platforms particularly AWS.

I have developed cloud native applications and solution stacks making use of AWS and OpenStack infrastructure. I've used Ansible and Terraform to define infrastructure as code using modern GitOps principles.

I have a degree in Electronic Engineering and a Masters degree in Bio Engineering.

Portfolio	Link
Generic Portfolio	https://github.com/sthysel
Container Portfolio	https://github.com/sthyselfreight

Qualifications

Qualification	Institute
B.Eng (Electronic)	University of Pretoria, South Africa (1997)
M.Eng (Bio)	University of Pretoria, South Africa (2001), Thesis: Investigation into the feasibility of an active Electrode EEG Data acquisition system
Other	Sun - Sun Certified Programmer for the Java 2 Platform 1.4

Work Experience

Sept 2016 - Current BHP

I am currently employed at BHP as Principal Software Engineer specialising in Computer Vision Machine Learning and MLOps.

I have hold various roles at BHP in the last five years, listed below.

https://www.bhp.com

Principal Computer Vision machine learning

I trained computer vision models using Tensorflow and Keras to classify live CCTV video streams to react on fault conditions in various applications. I also developed the inference and heuristic code around the model allowing the solution to actuate the various PLC and warning systems that reacts on the fault conditions. I'm currently developing the machine learning operations pipeline managing the process of training data capture, versioning, model training and model deployment to production, using existing BHP Azure iot-edge infrastructure.

Principal Data Engineer, Digital Facory WAIO

My primary role is building out AWS infrastructure for a BHP bespoke machine learning and forecasting system, focusing on data integration. Infrastructure is managed using Terraform tooling and modules.

Principal Software Engineer Innovation Center

My primary roles are software architect, programmer and systems integrator. I focused on systems built around machine learning stacks making use of GPU and Google's Coral TPU. Solutions are implemented in Python, hosted on Linux, containerized and managed using the balena.io platform.

We build a modular computer vision and sensor fusion framework and implemented a personnel safety system on top of that.

Video and other sensor feeds are fused into a real-time spatial awareness stream informing system state which in turns trigger warnings and alerts to machine operators and nearby personnel. Audio and visual alarms and warnings include synthesized context specific voice alerts and industry standard RAGA strobe light actuation via a CAN bus.

The system is composed of various independent sub-components all communication via a common local MQTT message queue running on a edge compute device. Detection and sys-

tem telemetry is communicated via 4G/LTE modem to a AWS stack used for analysis and visualization. Device fleet management is done using the Balena cloud service.

The system was developed in line with BHP's global technology and innovation push to make use of emerging technologies to enhance safety and reduce at-risk work.

I worked on number of other ML and computer vision solutions focusing on identifying and reporting production and ore quality issues.

Specialist Engineer production automation systems.

Projects I worked on include the SMART data logger project as well as the Magnet telemetry monitoring system.

I worked in the Production Automation Systems team at BHP as specialist technical engineer. Most activities during this period revolved around data aggregation and sensor fusing systems that aggregated various data streams into a single common source of truth via a extensive set of bespoke ETL components I developed.

My primary responsibilities revolved around the software architecture, implementation and deployment of device status and telemetry data capturing ETL software services. These services were deployed close to the interrogated devices on various physical and virtual platforms.

I worked on various projects during this time, most notably the SMART data logger project, a precursor to the Dahling data logger project which gathers data of SME using CAN and other protocols. And MAGNET, a status aggregating system focusing predominantly on in-pit telemetry systems.

Enabling technologies were Linux, Python, Kafka and MQTT.

Jan 2013 - Sept 2016 Centre for Comparative Genomics (GCC), Murdoch university

Senior software developer at CCG, Murdoch University, Western Australia. (https://ccg.murdoch.edu.au/)

I'm generally involved in the development and maintenance of software systems developed by CCG. I also work on various 'Big Data' or cloud projects that GCC is involved with. These

are AWS hosted. I'm responsible for the development and maintenance of the Bio-Platforms Australia's metadata portal: https://downloads.bioplatforms.com/

Duties:

- Development and maintenance of in-house software systems
- AWS Infrastructure development and maintenance
- General devops support work
- Development and maintenance of Bioplatforms Australia data and metadata systems
- Administration and maintenance of CCG's OpenStack cluster
- Linux and AWS system administration

June 2012 – Dec 2012: The University of Notre Dame Australia

http://www.nd.edu.au/fremantle

Senior Software Engineer at the University of Notre Dame's IT department. My primary duties involve the maintenance of Java based in-house developed systems in use at the University, as well as the development of new bespoke systems as needed by the various departments and schools.

Duties:

- Resolving Issues with in-house developed Java, web-based systems
- Integration with third party systems in use at the University
- Expanding the feature set of existing systems
- Developing new bespoke systems, Java web based using Spring, J2EE and other web technologies
- Automation of build and provisioning systems
- The care and feeding of the virtualized build, test and production Linux servers
- Systems and software architecture
- Software development infrastructure development and maintenance
- General MSSQL management

January 9, 2012 – 5 June 2012 : SAI Global – Cintellate – Senior Support Analyst

http://www.saiglobal.com/

I was employed as Senior Support Analyst in the SAI Global compliance department. My primary duties included support and maintenance of the Cintellate product suite both on SAI Global's hosted infrastructure as well as client's private networks.

I ws responsible for second level support ranging from general operations to Cintellate product suite specific troubleshooting.

Duties:

- General MSSQL, Oracle and Tomcat management.
- Generation and maintenance of Cintellate support infrastructure.
- Level two Cintellate issue resolution.

I left SAIG for Notre Dame as Notre Dame afforded me a software development role.

October 2007 – December 2011 : Thales Defence Systems – Senior Software Engineer

http://www.thalesgroup.com/

I was employed as senior software engineer at Thales Defence Systems, South Africa during this period. My duties included the design and implementation of battlefield information, simulators and associated training systems. I was primarily involved in the design and development of intelligence gathering and data fusion and extraction systems. I was also responsible for build and integration management.

Software were designed using UML methodologies, and were primarily implemented in Java SE 1.6 and J2EE 1.4. The target platforms were late versions of CentOS and Fedora Linux distributions.

I was primarily involved in the implementation of a large distributed JavaSE and J2EE based battlefield information system. The system has been successfully delivered to the South African National Defence Force. I was involved in the development of the training and simulation system associated with the above mentioned battlefield information system.

Duties :

- Design and implementation of intelligence gathering Man-machine interface

(MMI) using Java SE, J2EE, C++ and other technologies

- Implementation and design of the Surveillance Simulator visual training system. This is implemented in C++ using the Delta3D game engine, Google protocol buffers as well as the NetBeans rich client platform
- Infrastructure and system integration
- Linux system administration
- Interfacing with a wide variety of COTS sensors including Day/Night cameras, laser range finders and a man portable radar system. This includes the full software stack from driver to MMI.
- Hardening of the target platform to conform to Army intelligence security specifications.
- Build engineer responsible for managing continuous integration and automatic testing systems. These include Maven, Jenkins, Cobbler and Nexus.

July - October 2007 : Sensepost – Python Specialist

http://www.sensepost.com

My duties included the back and front-end design and implementation of security audit applications. Technologies used include Python 2.4/5, JavaScript, specifically the ExtJS library, the Python TurboGears framework and others.

October 2006 – July 2007 : GeoAxon – Software Development Manager

http://www.geoaxon.com

GeoAxon is a biomedical company focusing on tele-medicine. I identified the Java SWT based Eclipse Rich Client Platform as target development platform for all future GeoAxon desktop applications. I identified and designed the core modules needed by GeoAxon to implement the product range as dictated by the current business model. I sourced the necessary personnel and established the software development team at GeoAxon.

Duties:

- Determination and establishment of user requirements within the scope of a business proposal
- Generation and vetting of both high and low level software design specifications based on user requirements

- Architecture of proposed solution
- Project Management and reporting
- Management of a team of Java developers
- The establishment and maintenance of a structured software development lifecycle process.
- Administration and maintenance of local CVS repository
- Java software development
- Costing of business proposals

July 2005 – September 2006 : Quaint Technologies – Engineer

http://www.quaint.co.za

Systems were developed and deployed using Linux platforms (Ubuntu 5.10) leveraging a variety of Open Source Technologies. These included Python 2.4 with various 3rd party packages including Twisted, serial, and psycopg. I also implemented various Python modules using Pyrex and the Python C API. Other core technologies include gnu-c, Free Pascal and PostgreSQL as database engine.

Developed systems were interfaced with custom made hardware implemented on Xilinx Spartan 4 FPGA's using VHDL.

November 1999 - June 2005 : NetSys International – Software Development Manager

http://www.netsys.co.za

I worked on operational aviation and meteorological systems for various clients in Europe and Asia. My duties included on-site development and integration in Sweden and Taiwan.

Primary projects included WMCC (Weatherman Control Center), a graphical user interface to a Weather Data Message Switch developed in-house.

WMCC is deployed in by NATS (National Air Traffic Services of Great Britain) at Heathrow and Gatwick airports, by IMD (India Meteorological Department) at Deli, Mumbai, Calcutta and Chanae airports, the South African Weather Service in Pretoria as well as the University of Pretoria meteorological department.

WMCC has been expanded into NSWS, the NetSys workstation, an integrated meteorological and aviation office application. NSWS has been deployed in Taiwan, India and the UK.

I held various positions within the company:

Software Development Manager and EXCO 'New Products' process owner

My responsibilities as EXCO member and Software Development Manager overlapped. I was responsible for the development of new products and the management of the software development process. These included the management of a small team of developers. I investigated new technologies and evaluated their relevance in context of the company and made recommendations to the CEO on technology and product strategy issues. I was also responsible for the management and implementation of contracted projects.

Systems Architect

Responsibilities included the design of client - server applications. These predominantly made use of Open Source libraries, database systems and standard open communication protocols like xml-rpc. I was responsible for evaluating and selecting implementation technologies.

Software Engineer

My responsibilities included the design, implementation and integration of UNIX/Linux system and application software. Developments ranged from low level TCP/IP network based systems to high level Graphical User Interface applications using various open source libraries and frameworks including wxPython, Python, Perl and Perl/Tk.

Applications developed were predominantly based on a server client paradigm which, depending on the level of complexity, used either a low level token based protocol over TCP/IP or a custom DTD language using available XML libraries.

Application back ends were implemented using predominantly C and a relational database. Perl and Python were applied as rapid prototype languages. wx.Python and Python were extensively used in the creation of GUI front ends.

September 1998 – October 1999 : The Internet Solution – eCommerce Developer

http://www.is.co.za

I was responsible for the development of Internet related electronic commerce products. This included the design and implementation of back-end systems and general systems integration. Solutions were primarily implemented using propriety Microsoft based products and technologies. These include ASP, Exchange LDAP and Microsoft SQL Server. Other technologies I used include JavaScript (ECMAScript), JSP, Perl and C based CGI scripts.

April 1997 - August 1998 : University of Pretoria – Network and PC Support Technician

I was contracted as IT specialist at the University of Pretoria Department of Information Technology. My responsibilities included the administration and maintenance of Novell 4.11 servers, and Linux based mail and Internet proxy servers as well as end-user support for academic staff in the UP Faculty of Engineering. The user base included approximately 500 workstations of various architectures including MSDOS, MS Windows x.x, Windows NT x.x, Linux and Irix workstations.