Circus Scientist

Technology in Performance

CV

Tom Hastings Programming Resume

INTRODUCTION:

Are you looking for someone with varied programming related skills and a passion for problem solving. Perhaps a highly self motivated and creative person to join your team? I am looking for a challenge, to be involved in building something, learning new technology and sharing the knowledge I have gained from my own projects.

Downloadable PDF version of resume

Check out my Website and App portfolio here

Outline of my web-based contract with University College London

Contact: tom@devsoft.co.za

Personal Github

Work Github (mostly private repo's)

Devsoft.co.za – my software development business

Tech Blog

PROGRAMMING – LANGUAGES AND FRAMEWORKS:

1. **Python**
   In 2019 I started working with Flask, designing web interfaces for complex scientific workflows, and creating visualisations of large datasets. I started with Python after becoming interested in Machine Learning a few years ago, and Python is the language to use for this. My "Monkey Detector" app using Pytorch was a fun learning project (I actually recently helped make a more modern web-based version for somebody's PHD thesis in 2025 but can't really share that, it's yet to be published!). I also use Python for Kodi plug-ins on my home network, chatbots, MCP and more.
2. **JavaScript**
   Anyone developing for the web needs to know JavaScript. I am very familiar with interfacing the Flask back end with Jinja templating, Bootstrap, vanilla JavaScript, JQuery.
3. **Linux**
   I have been using Ubuntu as my main computing system for over 10 years, both in the cloud (DigitalOcean) and on my Laptop. As a touch typist I am extremely comfortable on the command line. Deploying web apps and services to an Ubuntu based server is second nature to me, using Apache or Nginx.
4. **Android (Java)**
   I have had seven Android apps published to the Google Play Store, five of which are written in Java. I have developed many more, including CoronaVirusSA, an open source app which graphed reliable stats on the COVID-19 outbreak in South Africa.
5. **Processing**

I have extensive knowledge of this Java-based programming language. The great thing about Processing is the way you can deploy to Desktop, Mobile, and Cloud with only a few modifications to the same code base.

6. **Bash**
   Over the years I have built up a library of useful scripts to solve problems such as bulk editing pictures or video, watching a directory for changes, auto backups, compiling, and much more – on the desktop or Ubuntu based virtual server.
7. **Git**
   Version control is a game changer for programming. I maintain a public repo at Github, a private one with BitBucket, and every software project I start has it's own commit history by version two.
8. **Arduino / PlatformIO**
   SmartPoi is a project I worked on for over 10 years. The process taught me many useful things about networking, embedded programming and IOT especially, since it is a connected "thing" project, using an Android app to control LED equipment in real time. The equipment I designed, programmed and built is used professionally in performance at Big Top Entertainment. Since I started with Arduino more than 10 years ago I have completed a huge number of projects, using peripherals like steppers, SD cards, relays, accelerometers and other sensors; and communications including WiFi, Bluetooth, IR, RF and Serial. Currently my favourite MCU is the S3 Super Mini ESP32 – used in the Web Services enabled upgrade to SmartPoi – Magic Poi.
9. **Others**:
   Systems administration – I have been using Ubuntu Server since 2014, most recently hosted on Digital Ocean. LAMP stack, LetsEncrypt, ssh, systemd.
   MCP – I can spin up an MCP server and interface with any LLM.
   Aider AI coding assistant – I use Aider on the command line for creating code. I do, however, check every line before pushing to production!
   C – after using Arduino for so long, I have started using c for some things, particularly looking at networking, since it is so much faster.
   SQL – PostgreSQL, SQLite and MySql for back-end DB in Python (SQLAlchemy).
   Redis – with RQ workers for long term tasks on the back-end.
   Mosquitto – I host my own MQTT service with Python code to manage users

Docker – I have built and deployed a few Docker containers for various web services.
Google Cloud platform – This is a large resource I have looked at and tested various parts of for personal and work projects – the mapping, image recognition, push notifications and speech to text in particular, as well as using app engine and real time database.
Cloudflare – Cloudflare Workers, CDN deployment
AutoHotkey – when I was using Windows I used this scripting language to automate many GUI processes
Microsoft VBScript – I made a front end for our business Excel Spreadsheets (to easily search for customers, add orders, automate mail merges and so on) My wife is still using this system after 9 years.
Kotlin – Anyone making apps for Android knows about Kotlin. I published a Kotlin based app (using Machine Learning) to the Google Play Store and another based on the same code. Here is the write-up on how and why I made the original Monkey Detector app.
PHP – not really but I did publish a forked and adapted WordPress plug-in recently.

10. **Visual Programming Tools**:
    Scratch – I taught myself this so I could show my son
    App Inventor from MIT – after learning Scratch I tried this out, and made a few apps with it. A great tool for learning.

DIGITAL SKILLS:

1. **Wordpress**
   I have built and host several websites, including this one. Here is one for party venues in Durban, and this one is to showcase my entertainment company. I used DIVI theme for this one.
2. **Google Adwords and Analytics**
   I am very familiar with this tool for tracking customer engagement online, and reaching new audiences.
3. **Excel**
   I am familiar with Spreadsheets, a useful tool. I developed a front-end for our spreadsheet based booking system (using VBScript), which my wife is

still using today.

4. **Scribus**
   Desktop Publishing is a valuable tool for creation of content. I have used Scribus to make pamphlets and posters, and more recently a PDF manual for the SmartPoi product. Lately I have just been converting Markdown to PDF though for faster results.
5. **Kdenlive**
   Video editing is part of my job at Big Top Entertainment. There are some old and some new examples of my work on the Big Top YouTube channel. The best part about Kdenlive is that it's based on the easily scriptable "melt" back-end.
6. **Krita**
   Picture editing is something I have to do often, whether for a new app icon, or promotional photo. When it comes to bulk editing, nothing can beat command line tools like ImageMagick.
7. **FreeCad**
   A friend has a 3D printer and I have designed a few models for it. Here is one version of SmartPoi visualised.
8. **Fritzing / EasyEDA**
   Circuit design is an advanced topic, however Fritzing makes it easy to do. From breadboard to circuit, the SmartPoi circuit was designed using this tool. More recently, Magic Poi PCB was created and brought to market using EasyEDA professional version.
9. **Music production**
   A long time ago I was a working musician and part of my job was sound. I did a lot of editing with software such as Sonar Music Creator, Reason and Ableton Live. I am very familiar with music production as a result – more recently I implemented FFT sound reactivity for my SmartPoi Android app.

PERSONAL SKILLS:

1. **Team Player**. As a remote developer, communication is key, I don't hesitate to ask questions and try to always communicate clearly with other developers. At my entertainment business, Big Top Entertainment, every day is a new challenge. From 5* Hotels to Cruise Ships and Shopping Malls,

we have to be ready to perform. In my nearly twenty years in the entertainment industry I have learned to manage customer expectations, sell myself and my company's products; how to manage a team, and be managed as part of a team. Most of all I can say that I am a team player.

2. **Self Management**. As an entrepreneur who works from home I have learned valuable time management skills over the years. I use the Kanban style to-do list to keep on top of my progress in projects. Every spare moment is an opportunity to complete a task.
3. **Persistence**. If you don't succeed, and Stack Overflow doesn't have the answers, come back to it later. I love tackling problems from multiple angles at once, and recognizing when I may have a knowledge gap which may need to be filled before proceeding.
4. **Reliability**. My reputation stands for its-self. Reliability means not only being on time, but being early. This is not just something I believe, it's something I live by.
5. **Friendliness and courtesy**. I meet new people every week as part of my entertainment job. I am fascinated by different cultures and enjoy interacting with fellow team members, and working together towards a common goal.

SHOWCASE:

Most of the side projects are covered in my Tech Blog

Practically all of my time from 2024/25 has been focused on bringing Magic Poi to market – in association with EnterAction over in Australia. Progress has been documented on my Patreon.

For over two years (2020/21/22) I was involved in a couple of challenging projects, Onto-spread-ed – making it easier to input ontology data using online tables – and Onto-text-tag, visualising tagged text (sourced from articles on the biomedical literature site, PubMed) using the spacy python library. Both of these projects utilize JavaScript, JQuery, Jinja and Bootstrap on the front end, with a Flask back-end hosted on Google Cloud.

Outline of my web-based contract with University College London

Another recent project (2021/2022), similar to the above, involved building a web interface to access the PascalX gene scoring program – with a long running service (up to 24 hours) and sending results via email after processing the data. I used RQ scheduler and Redis to queue the incoming jobs. I also had to pay strict attention to GDPR requirements as it was for the Computation Biology Group at the University of Lausanne (Switzerland)

In 2021 I used my newly acquired Flask skills to launch LED WebSite Indicator, a free subscriber service which blinks an LED whenever you receive a visitor to your website. This project included a custom WordPress plug-in, MQTT service, and web based subscription work-flow, as well as embedded code to check in to the service and blink the LED. I also published a python library to make this service easy to use from Flask/Django based sites. *This service was sunset in 2025.*

As mentioned previously I have seven apps published to the Google Play Store. In addition I have made the Teddy_Bear_Detector, and CoronavirusSA apps available to download and evaluate. Source code is also available on my github.

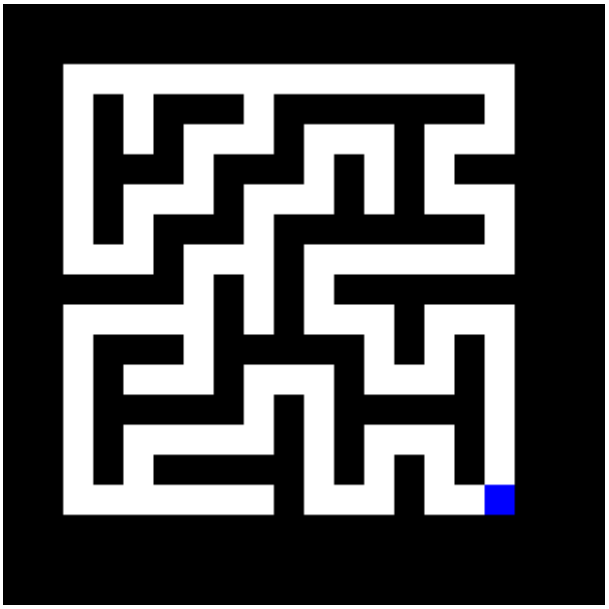
This website, circusscientist.com is a kind of showcase in its-self, so please browse around and have a look at some of the projects.

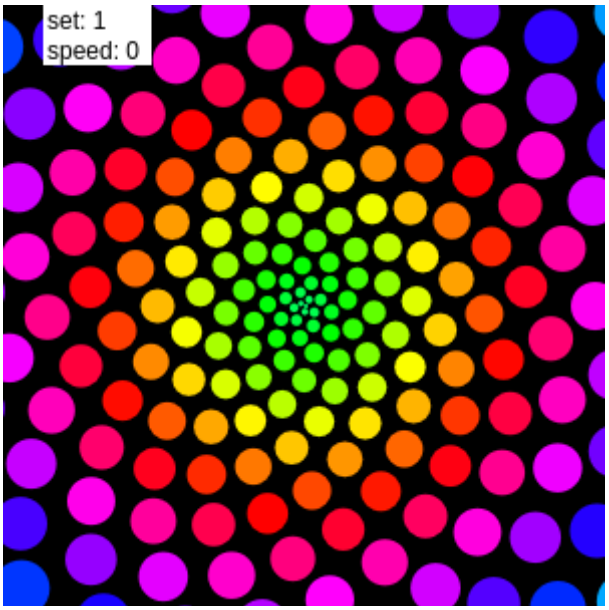
My Github is here: https://tomjuggler.github.com – most of my code is hosted privately with bitbucket, but I do share where I can.

Also you can check out the fun POV poi demo (turning a square into a circle, kind of magical) – just click on the image to change it.

The K8 juggling ball colour change demo from 2018 is also kind of fun (instructions are here)

Some sketches built with Processing.js:

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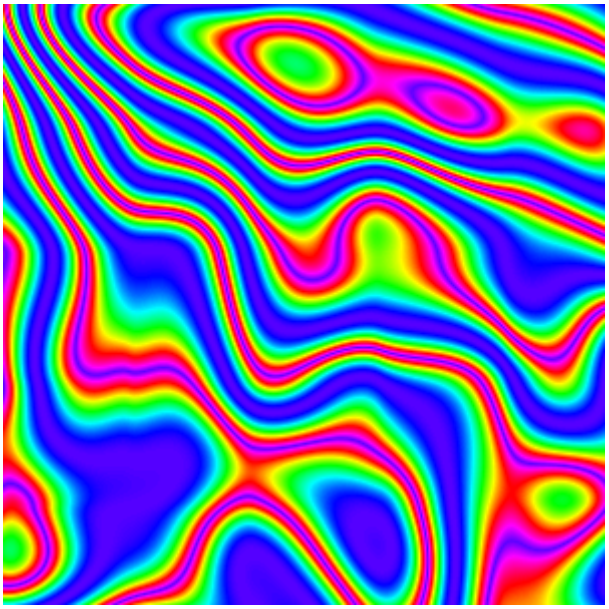

Video footage of me hard at work:

Visual done with gource (git visualiser) of development on the SmartPoi project