David Karibe

Curriculum Vitae

"People who are really serious about software should make their own hardware" -Alan Kay

Education

2012–Current **Masters of Science**, *Physics*, The University of Nairobi, *On-going*.

2005–2009 **Bachelor of Science**, *Physics (Electronics)*, The University of Nairobi, *Second Class Honours, Upper Division*.
Specialized in Applied Microprocessor and Instrumentation

Experience

2010–Current **Senior Technologist**, University of Nairobi, Physics Department.
In charge of undergraduate and research laboratories in the electronics and laser applications thematic section.

Responsibilities:
- Offering technical support to undergraduate and postgraduate students during laboratory sessions and projects
- Offering technical support to researchers in the department
- Repair, maintenance and development of new laboratory set-ups
- Departmental website administrator
- Development and presentation of annual Nairobi International Trade Fair projects
- Assisting in procurement of new laboratory equipment (computers, research tools, embedded development Kits and assorted electronics components)
- Facilitating and attending conferences and workshops for research
- Developing and maintaining laboratory and student information management systems for use in the department

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Vocational

2008 **August Holiday Internship**, University of Nairobi, Physics Department, Industrial Electronics Unit.
Developed an embedded system using a microcontroller as a serial communication device to a computer and a Java desktop user interface.

Detailed achievements:
- Learned and exercised problem solving techniques; brainstorming, problem definition and problem disintegration.
- Java Programming
- Circuits design, PCB prototyping and hardware debugging
- Applied Micro-controller programming in C
- Project Documentation

Miscellaneous

2009–2010 **Web Developer**, *IMAGINE BRANDS*, Nairobi.
Developing dynamic web-interfaces in PHP/MYSQL and implementing blogs using WordPress, as well as general computer software and hardware maintenance

Computer skills

Basic Python, PERL, Eagle

Intermediate ASSEMBLY, Java, Android platform, HTML/CSS/JavaScript, LaTeX, Linux (Kernel and Userspace system configuration), shell scripting, Git (Version Control and collaboration)

Advanced C, C++, systemC, PHP and MySQL using LAMP server, Matlab/Octave, Schematic and PCB prototyping

Embedded Development Skills

Software

Toolchains ARM GNU toolchain: General set-up and configuration: experience using it for firmware development in latest teaching and project work

Debug Severs OpenOCD, USBDM, Jlink and PE-micro: experience of use for debugging ARM targets including Freescale KL Series and ST Microelectronics' microcontrollers

IDEs Zilog's ZDS II, Eclipse (CDT) with Freescale's Processor Expert and hardware debug plugins, AVRDude, Mbed platform: Used them for teaching and projects.

Simulation SystemC and Matlab: Used in latest teaching and research work, MSc project

Interfacing Research equipment interface to Linux OS including spectrometers and cameras for Matlab platform and web-based UI

Hardware

Prototyping PCB using toner transfer method (double sided boards with rivetted vias)

Testing PCB signal troubleshooting using oscilloscopes and logic analyzers

Debugging Serial Wire Debug(SWD with ARM CMSIS-DAP) using Freescale freedom boards, Tower KITs and Zilog ZDS II KIT for the Z80 controllers

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Wireless — signal tracing using RF spectrum analyzer (SPECTRAN HF-6060 V4) for antenae prototype testing

Workshop Skills

3D Modelling — SketchUp; precision 3D modelling for 3D printing and visualization 3D models for electronics components to be used in PCB layout 3D inspection

3D printing — using Ultimaker2 with Cura slicing tool: For product prototyping; plastic housing for embedded systems boards, optic bench alignment custom and replacement components, new setups for holographic imaging, drone parts for a remote sensing project

Technical Training

Multispectral Imaging and Remote Sensing

Remote Sensing — Using lasers and telescopes in remote sensing, data analysis in Matlab, 2 Weeks at ICIPE-DUDUVILLE CAMPUS, Kenya (2011)

Multispectral Imaging Course — Digital imaging labs, Flourescence imaging labs, MRI imaging, Image Processing in Maltlab, 3 months at Lund University, Sweden in 2012

Multifunctional Bench Microscope — Design of a multispectral bench microscope and Matlab software implementation, 2 weeks at Sally Mbuor, Senegal (2015)

Photovoltaic Systems

Photovoltaics Trainer — PV systems sizing and installation, 2 days at the Physics Department, University of Nairobi

Tailor-made Advanced Training in Photovoltaics — PV labs, Grid-tie systems, Roof installation, Special applications on portable devices, 2 weeks at Delf University, Netherlands

Languages

English — **Fluent (Speaking, reading and writing)**

Swahili — **Fluent (Speaking, reading and writing)**

Kikuyu — **Native language**

Interests

- Movies
- Blogging
- Music
- CAD and 3D printing

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