

JAMES KINCELL MEng (Hons) MIET

Creative Technologist / Electronic Design Engineer

Creative Technologist & Electronic Design Engineer specialising in prototyping, interactive systems, experiential technology, and hands-on innovation. I design and build functional prototypes that merge electronics, firmware, software, lighting, IoT and creative technology – translating ideas into real experiences. I thrive in R&D, experimentation and cross-disciplinary collaboration, bridging the gap between creative concepts and working technical solutions.

CREATIVE TECHNOLOGY & INTERACTIVE PROJECTS

- **Large-format LED Matrix Display** – Designed, built and programmed a large-format DJ-booth LED matrix for visual lighting effects at public events. (32-bit microcontroller, Art-Net, custom driver hardware)
- **Canal & River Trust Pride Bike** – Built a portable, battery-powered PA speaker system on a trike for Canal & River Trust public engagement.
- **Home Automation / Smart Lighting** – Designed ESP32-based lighting and sensor systems using Home Assistant, MQTT and custom firmware.
- **Rapid end-to-end prototyping** – from concept → electronics → firmware → integration → field-testing.
- **Sensor-driven Interactions** – motion, light, temperature, audio-reactive behaviour via embedded electronics and real-time firmware.
- **Ruggedised, field-tested builds** – systems designed for real-world use at public and outdoor events.
- Full write-ups at: currentsauce.co.uk – My website covering electronics builds, IoT projects, repairs, hacks and interactive lighting systems.

EXPERIENCE

Thales Group – Defence Mission Systems, Electronic Design Engineer

OCT 2022 – PRESENT

- Led rapid prototyping and problem-solving across multidisciplinary teams, turning early concepts into functional hardware for complex systems.
- Designed, built and validated custom test and measurement equipment used to verify new electronic assemblies and production units.
- Diagnosed and repaired legacy PCBs with minimal documentation, creating practical, modernised replacement solutions.
- Produced clear commissioning and test workflows used by production and support teams with varying technical backgrounds.
- Worked closely with mechanical, software and systems engineers to resolve integration issues and improve reliability in real-world environments.
- Defined test criteria and documentation to support product acceptance and field deployment.
- Designed and debugged new electronic modules, including redesigns addressing component obsolescence and system-level constraints.
- Developed add-on daughterboards for PCI backplane systems to extend connectivity and support high-speed communication interfaces.
- Built strong working relationships with internal stakeholders, ensuring technical decisions and progress were communicated clearly across teams.

Waters Corporation (Micromass UK), Electronic Design Engineer – Advanced Mass Spectrometry Technologies.

FEB 2022 – OCT 2022

- Developed compact high-voltage and analogue modules for precision instrumentation, taking concepts from early design through to working hardware.
- Delivered space-constrained hardware redesigns that reduced component count, improved manufacturability and met strict mechanical limits.
- Designed and characterised multi-output high-voltage modules (± 430 V), achieving major stability improvements through active thermal compensation techniques.
- Prototyped, assembled and tested circuits using bench equipment and custom-built fixtures, iterating rapidly based on real measurements.
- Created clear documentation, assembly notes and test procedures to support smooth hand-over into production environments.

CONTACT

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SKILLS OVERVIEW

Electronics & Systems:

- ▼ **Design and Integration**
Analogue, Digital, Embedded & Power Electronics
- ▼ **Embedded Systems**
Microchip/Atmel, STM32, ESP32, Arduino
- ▼ **FPGA & Digital Logic**
VHDL, TCL, Vivado, Quartus, Artix/Kintex
- ▼ **RF/Analogue**
S-Parameter Testing/Tuning, Gain Compression, High-Voltage Design
- ▼ **Circuit Simulation & Verification**
LTspice, Oscilloscopes, Analysis
- ▼ **Protocols**
DMX, Art-Net, RS-232, SPI, I²C, UART, 1-Wire, CAN
- ▼ **Schematic Capture & PCB Design**
Mentor Xpedition, Cadence Allegro, Zuken CadSTAR, KiCad
- ▼ **3D Design**
SolidWorks, OnShape
- ▼ **IoT & Control Systems**
MQTT, WiFi/Serial Protocols, real-time control, Home Assistant Integrations

Lab Skills:

- ▼ **Soldering** to a professional standard
- ▼ **Surface Mount** down to 0402 size
- ▼ **Modification and Rework** to IPC standards

Equipment Skills:

- ▼ **Oscilloscopes** ▼ **Spectrum Analysers**
- ▼ **Vector Network Analysers**
- ▼ **LCR Bridges** ▼ **Function Generators**
- ▼ **Arbitrary Wave Generators**
- ▼ **Digital Multimeters**

Other Software & Toolchains:

- ▼ **Embedded IDE:** Microchip MPLAB X, STM32CubeIDE, Arduino IDE/PlatformIO
- ▼ **FPGA:** Xilinx Vivado, Altera Quartus
- ▼ **Analog/RF Simulation:** LTspice
- ▼ **Signal Integrity:** Mentor HyperLinx
- ▼ **CAD:** OnShape, SolidWorks
- ▼ **Version Control:** GIT, SVN
- ▼ **OS:** Windows, Mac and Linux – GUI & CLI

Programming / Scripting:

- ▼ C/C++ for Embedded
- ▼ Python (automation, tooling, scripting)
- ▼ VHDL
- ▼ Visual Basic, Visual C
- ▼ C Shell / BASH / CLI Tools

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Waters Corporation (Micromass UK), Electronic Design Engineer – Electrical and Electronic Engineering Team.

FEB 2018 – FEB 2022

- Designed, maintained and improved electronic subsystems across multiple instrument platforms, balancing performance, reliability and real-world constraints.
- Enhanced signal-processing stability by refining FPGA (VHDL) logic and analogue front-end circuitry, solving noise and timing issues through iterative prototyping.
- Developed and characterised a dual-gain RF pre-amplifier for Time-of-Flight instruments, including S-parameter measurements, gain-compression testing and practical optimisation.
- Created and simulated analogue circuits for RF-generator platforms using LTspice, accelerating early-stage design decisions and reducing development cycles.
- Supported prototype builds, hands-on fault-finding and system bring-up during lab commissioning, collaborating closely with firmware and mechanical teams.
- Contributed to design reviews, documentation and cross-disciplinary decision-making throughout the full product lifecycle.

Thales Group – Defence Mission Systems, Digital Design Engineer

OCT 2016 – FEB 2018

- Developed digital subsystems using Artix-7 and Kintex-7 FPGAs, working within a small, fast-moving team to turn requirements into working hardware.
- Designed, simulated and implemented VHDL control logic using Xilinx Vivado and Mentor QuestaSim, iterating quickly based on real test results.
- Created and integrated custom mezzanine cards to extend system connectivity, including high-speed links (HOTLink 8b/10b) and a range of serial interfaces.
- Supported production and field teams with board-level troubleshooting, repair and practical fixes under real use-case constraints.
- Delivered updates that improved reliability, ease of servicing and long-term maintainability of deployed systems.

Thales Group – Defence Mission Systems, Electro-Mechanical Engineer

OCT 2015 – OCT 2016

- Key contributor within the hardware development team, helping design, improve and maintain multiple product lines.
- Built test scripts and monitoring tools to simulate system behaviour, capture diagnostic data and verify thermal performance during development.
- Carried out hands-on debugging and parameter verification, identifying issues early and implementing practical fixes before release.
- Provided on-site technical support for international projects, including field work and real-world troubleshooting.
- Maintained detailed build and test records to support traceability, collaboration and informed design decisions.

DC Voltage Gradient Technology & Supply (DCVG), Electronics Engineer

OCT 2014 – OCT 2015

- Designed new survey instrumentation using PIC18 microcontrollers, integrating SD, USB and GPS functionality into embedded systems.
- Built complete working prototypes end-to-end — PCB design, firmware development, assembly, testing and iteration.
- Delivered on-site testing, calibration and technical support, validating performance in real field environments.
- Worked closely with mechanical engineers and end users to refine functionality, usability and long-term reliability of the equipment.

Imagination Technologies Ltd, Verification Engineer

Summer Internship: JUL 2012 – SEP 2012 & JUL 2013 – SEP 2013

EDUCATION

2010 to 2014: The University of Manchester, M.Eng. in Electrical and Electronic Engineering, Second Class Division One Honours

2007 to 2009: John Leggott College, Scunthorpe. Maths, Physics, Computer Science and Electronics at A-Level, four A's

2002 to 2007: Hatfield Visual Arts College, Doncaster, 14 GCSE's, (9 A, 3 B & 2 C's), IGVNQ (worth 4 GCSEs)

PROFESSIONAL DEVELOPMENT

Product Design for EMC

TÜV SÜD / Mach One Design EMC Consultants

Comprehensive VHDL (VHDL for Designers and Advanced VHDL)
Doulos

Signal Integrity with Hands-On Simulation

EE-Training

Schematic Entry in the Xpedition Flow
Mentor Graphics / Siemens

Designing FPGAs with the Vivado Design Suite 3
Core-Vision

COMMUNITY & ENGAGEMENT

STEM Ambassador:

Active STEM ambassador. Developed many hands-on demos for outreach events while at Waters Corporation.

Repair Café Volunteer:

Electrical & Electronics Repair Specialist at monthly Bramhall Repair Café.

OutdoorLads Event Tech Lead

Volunteer role, mainly for "BIG Events"

REFERENCES:

On Request