JAMES ROSE

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Embedded engineer with 8 years' experience shipping products, specialising in low-level optimised embedded C for microcontrollers, PCB design and full-stack web.

Open to remote, hybrid or full-time on-site (no relocation) - UK citizen

EXPERIENCE

TRIAC DEVICES **July 2025 - Present**
Embedded Software Engineer (Company Director)

- Designed and brought up 6-layer BGA board based on STM32H7 with impedance/length matched external SDRAM for fully programmable graphical display module.
- Built firmware executing both LUA and JavaScript engines on the microcontroller, with browser-based editor with live refresh and connection of real device.
- Compiled same firmware to STM32 and WebAssembly (emscripten) so runs identically in browser, making web editor a cycle accurate simulator.
- Developed feature rich web editor with cloud sync/tunnel and user submittable public database.

Dumarey Flybrid **Oct 2023 - July 2025**
Embedded Software Engineer (Employee)

- Developed JavaScript based HMI for control and monitoring of commercial battery system status.
- Integrated Chromium on buildroot to host HMI on embedded hardware.
- Designed 24V power scheduling PCB and firmware with CANBus communication.

Rowan Astronomy **May 2020 - Sept 2023**
Embedded Software Engineer (Contract)

- Designed an EMC compliant circuit board with stepper motor control, optical encoder, handset, and RS232 interface.
- Hand assembled and prototype circuit boards for fast prototyping and testing.
- Designed and implemented a 2-star alignment routine to establish telescope orientation in relation to the night sky.
- Developed a web-based planetarium (WebGL), with astronomical databases, enabling remote telescope control via Wi-Fi connection
- Developed a comprehensive test program and PC simulator to validate and verify the functionality of new firmware versions.
- Designed and implemented a bespoke embedded codebase with stepper motor control, integration of astronomical protocols and GPS protocols, and astronomical calculations for real-time planet positions and astronomical coordinate system conversions.
- Implemented Bluetooth Low Energy HID support with accompanying web interface to allow the connection of commercial joystick/gamepads/keyboards to be used to directly control the telescope position

Aircrew Flight Instruments **July 2017 - May 2020**
Embedded Software Engineer (Company Director)

- Developed a fast and reliable bare metal embedded C codebase for the low cost, multi-function avionic instrument including a scalable traffic screen to show nearby aircraft with backup altitude and heading reference.
- Designed an EMC compliant circuit board with a STM32F7 processor interfacing with I2C and SPI based accelerometer, gyroscope, magnetometer, and barometer; with an interrupt-based quadrature rotary encoder, 8bit parallel IPS TFT display and SD card.
- Integrated protocols for all major civil aviation electronic conspicuity systems over RS232/Wi-Fi, allowing for multiple devices to be connected, using DMA UART buffers.
- Developed an encrypted bootloader for firmware updates over USB (C# application) or Wi-Fi (iOS/Android app).
- Designed a cost-effective machined billet aluminium housing in Fusion360 to integrate custom circuit board and screen
- Fulfilled orders to over 300 customers in UK, Germany, France, Spain and USA.

EDUCATION

Banbury And Bicester College **2015 - 2017**
Pearson BTEC Level 3 Extended Diploma in Computing/IT - Triple Grade Distinction* Distinction* Distinction

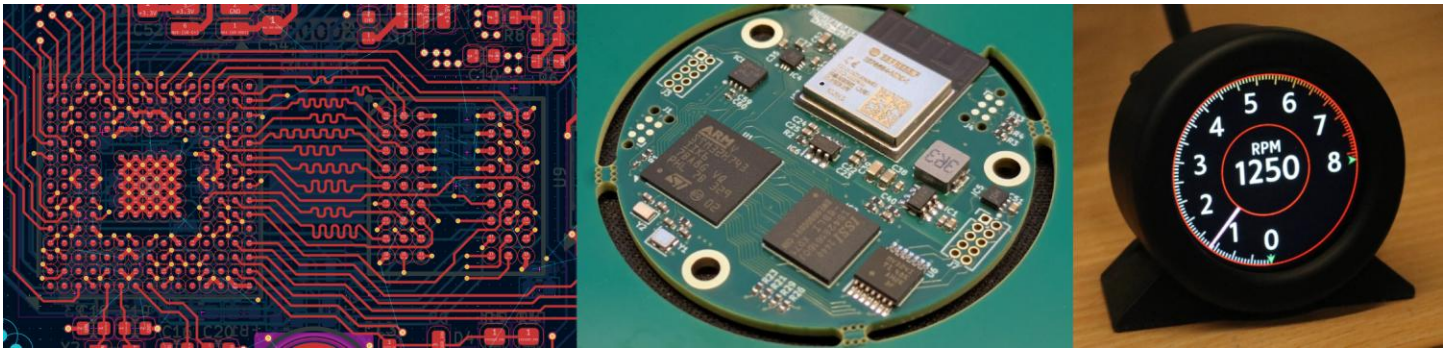
SKILLS

Languages	**Proficient:** C, JavaScript **Experience with:** C++, C#, Python, LUA, PHP, SQL
Microcontrollers	STM32 (H7, F7, L4, G4)
Microprocessors	Raspberry PI (CM4/CM5), STM32MP2
PCB	Eagle PCB (2017-2023), KiCad (2024 - Present)
CAD	Fusion360, Blender
Web / Tooling	Git, NodeJS, Preact+Valtio, Emscripten, WebGL
Platforms	Bare Metal, FreeRTOS, Buildroot Linux, Windows

Project Portfolio on next page

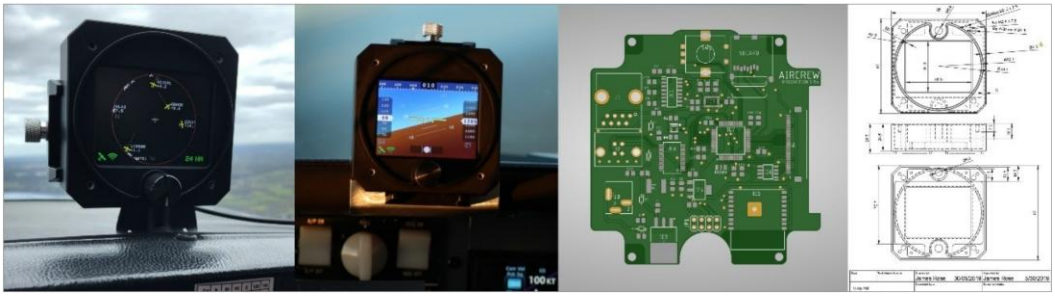
PROJECT PORTFOLIO

TRIAC PD20 (Programmable Display)



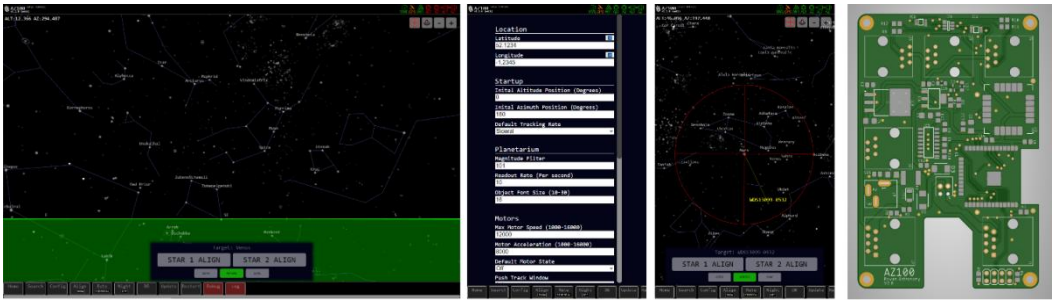
The PD20 is a fully programmable display to allow users to design their own screen with embedded JavaScript and LUA widget via a web based editor. Demo: https://triac.co.uk/editor/?demo=rpm_js

Aircrew Flight Instrument



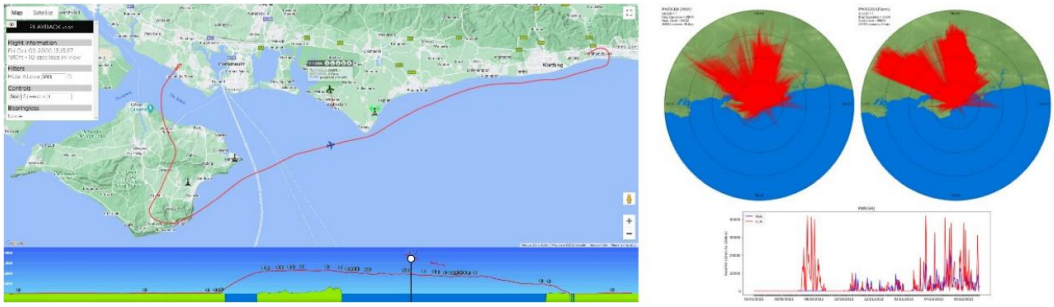
The Aircrew Flight Instrument is a multi-function instrument combining traffic, artificial horizon and a heading indicator into a single screen. Independent Review: https://www.quizaero.co.uk/post/review-aircrew-portable-instrument

Rowan Astronomy AZ100 Motor Drive System



The Rowan Astronomy AZ100 Motor Drive telescope system allows for the remote control of a telescope via Wi-Fi using a web-based planetarium.

Groundstation Flight Analysis



A flight data analysis tool used to show what aircraft flew within a certain proximity to the flight recorded which was used in airprox investigations.