

Mx Phoenix Smith

Pronouns: they/them

Engineer with a wide range of skills throughout hardware and software.

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— Education

2013-18 Heriot-Watt University, Scotland
Computing and Electronics Masters (MEng): Graduated with Distinction

— Experience

ZeroEV, Bristol, England
2021-2023 Software and Electronics Department Manager

ZeroEV, a company specialising in converting classic cars to electric.

- Ownership of product delivery, from conception through engineering and development to delivery
- Team task planning and collaboration with other departments and external customers
- Electronics schematic, PCB layout and software design reviews with team to ensure best practises are followed

2020-2021 Principal Software and Electronics Engineer

- Embedded software development, including Tesla Model S Drive Unit Software, CCS1/2 DC fast-charging, Vehicle Control Unit (VCU), Gauges and instrumentation including range and consumption calculation software
- Special builds including; TopGear Ice cream truck, EV Full scale B-19 flying fortress, Indiana Jones EV tuk-tuks
- PCB design up-to 4 layer board's including component selection and schematic capture
- Testing and validation of components (V-cycle product development), DVP planning, FMEA documentation.
- Debugging and root fault cause finding, including working with CAN tools such as Vector CANalyzer.

2020-Present: SGHInnovations, England
Director: Self Employed part time company

I commercialised my brake-by-wire control system and sell on my web-store. <http://sghinnovations.com>

2021-2022: Hypermile, London, England
Contractor: Electronics and specialist Hardware consultant

Specialist hardware, software and electrical support during very initial startup phase.

2019-2020: Futuremotiv, Coventry, England
Electrical Engineer

- Wrote software for **McLaren Speedtail** Hypercar interior lighting and debugged electronic problems
- **Dyson Electric SUV** labcar and VP builds; LV harness build/testing and prototype dash programming
- **Rivian R1S/R1T** component owner DC/AC inverter powering camp kitchen and USB charging ports. Spent 3 months in America during prototype build phase as representative for UK based electrical engineering team.
- Alpha prototype build for **Lordstown Electric Truck**, in Detroit, Michigan for vehicle integration and bringup

2018-19 TATA Technologies, Leamington Spa, England
Graduate Engineer

My entry into the automotive world, involving these projects:

- McLaren - Low voltage electrical team including VP build support for now released McLaren 620GT
- Jaguar LandRover (JLR) launch engineer at Liverpool plant during new Evoque ramp-up
- Caterpillar, within software team for engine calibration and ECU development including HIL test rigs

UK Driving License

Over 9 years driving experience, clean license.

High Voltage Trained

IMI Level 3 Award in Electric/Hybrid Vehicle System Repair and Replacement

US Summer School Camp Counsellor

In 2018 I was a camp counsellor working in the Circus department with kids aged 8-18. Cultural exchange Visa.

Identity

3 Years ago I began medically transitioning to non-binary and I am still developing my identity as I feel more comfortable as my true self.

Travel

- British, yet born in Vienna and travelled extensively since childhood, comfortable with travel for work
- Basic German language proficiency

Videography / Youtube

Since uploading my first video in 2009 I have enjoyed creating content, my most popular video has 3.6 million views. <https://www.youtube.com/@seb43654>

Slacklining / Unicycling

I enjoy very unusual sports. Slacklining is similar to tightrope walking, but more bouncy. I also enjoy mountain unicycling - think mountain biking but with only one wheel.

Paragliding

3 Years ago I learnt to paraglide and obtained a Club Pilot rating. The feeling of flying like a bird and catching lift and thermals is amazing when up in the sky.

Drones

Eight years ago I designed an entirely unique 3 rotor drone with thrust vectoring. Since then I have made a hexacopter for filming, and built a small racing drone.

References available upon request, additional information on LinkedIn

Portfolio

Recharged Heritage Electric Classic Mini

I was responsible for entire powertrain software and electrical integration from battery to motor, inverter and all high voltage ancillaries. Website: <https://rechargedheritage.co.uk/> Project in partnership with BMW.



What I did

- Entire V-cycle programme development for HV powertrain
- Worked closely with different Tier N suppliers of VCU, motor, BMS to integrate software to work together
- Tuning VCU calibration over many miles of test driving to ensure vehicle driving dynamic was met, feeding back changes to supplier for adjustment
- Developing software for V2X capability on charger to allow Mini to supply 230v AC to charge other EV vehicles for example

What I learned

- How to develop safety critical VCU software
- How to integrate china supplied motors with western supplied VCU and BMS, supplier communication
- Road and dyno testing and tuning including drive cycles and WLTP range calculation



TESTING MOTOR AND VCU ON BENCH SETUP

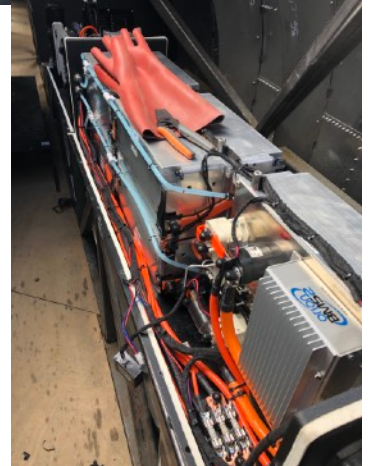
Electric B19 Bomber for Netflix Series

I was responsible for the battery BMS and motor inverter software to make a full scale B19 bomber silently taxi around the runway at Abingdon for upcoming "Masters of the Air Steven" Spielberg TV Mini Series.



What I did

- Worked with Teir 1 supplier of motor inverter to develop unique torque vectoring control for skid steering
- Testing and tuning of software at airfield following feedback from directors
- Coordinating with ground crew team and mechanic teams to carry out work efficiently
- Configuration of battery management profile
- Briefing film crew on operation and safety of system



ONE MOTOR ON EACH FRONT WHEEL

HV BATTERY IN FUSELAGE

Hobby: Autonomous Self-Driving Car

My family lives in Scotland and I couldn't be bothered driving. I decided to make my car drive itself. Ongoing project for 2+ yrs

How I made a 18 year old car autonomous:

1. Reverse engineered the Smart CAN to extract wheel spd, vehicle status
2. Retrofitted Tesla brakes to obtain brake-by-wire capability
3. Reverse engineered original power steering ECU and made my own custom design for steer-by-wire capability
4. Intercepted the throttle pedal signals to get throttle-by-wire control
5. Added Ford Focus Mk4 Radar and Toyota Rav4 steering angle sensor
6. Integrated open source 'Openpilot' into vehicle running on 2016 phone
7. Saved \$\$\$ by not having to buy a Tesla with self driving



SMART ROADSTER, DRIVEN OVER 23,500 MILES AUTONOMOUSLY OVER 3 YEARS



AUTOPILOT ENGAGED, SHOWING LANES AND PATH PLAN

What I learned

- Entire ADAS hardware/software stack and how all components function together
- Significantly improved python / c++ software skills
- How to develop ASIL D safety critical components including PCB design and software
- Tuning PID and control systems to controls cars actuators effectively