Tom MacDonald

07803 437385 | macdonald.tom8991@gmail.com |

PROFESSIONAL SUMMARY

Third-year Meng Electrical and Electronic Engineering student with growing interest in analogue circuit design, engineering simulation, and renewable-energy applications. I take a patient, methodical approach to technical work and enjoy learning through firsthand experimentation. Recent projects have helped me build confidence in practical electronics, MATLAB modelling, and CAD/FEA workflows. I am motivated by opportunities where I can continue developing my technical foundations while contributing to real engineering challenges.

EDUCATION

University of Aberdeen
Meng Electrical and Electronic Engineering with Renewable Energy 2023 - present

WORK EXPERIENCE

Bartender **2025 – present**
Rustico Restaurant Aberdeen, Scotland

- Manage high-volume bar operations, including inventory ordering and stock management.
- Delivery high-quality service in an extremely demanding environment, prioritizing multiple tasks from cocktail/tea/coffee service, food service, food and waste disposal and mid-shift stocking.

Luxury Sales Assistant **2021 – 2023**
BoConcept Scotland Clackmannanshire, Scotland

- Managed end-to-end sales processes for luxury furniture, catering to both private and business clientele.
- Navigated complex booking and building systems to ensure seamless order fulfillment.
- Developed advanced sales techniques through online and in-person workshops for effective rapport building and end-product outcomes to ensure long-term customer satisfaction.
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Travel Sales Assistant **2016 – 2021**
Ramsay World Travel / Hays Travel Clackmannanshire, Scotland

- Fast-tracked from an administrative apprentice (handling ticketing, invoicing, and fiscal reporting) to a customer-facing consultant.
- Curated diverse travel portfolios, including luxury, cruising and tailored itineraries whilst building a loyal and confident customer base.
- Successfully navigated a major industry transition during the Thomas Cook dissolvement and COVID pandemic, quickly mastering new sales systems and administrative protocols.

PROJECTS

2-Bit Full Adder | Personal Project

- Constructed a 2-Bit Discrete Component Full Adder Utilising Resistor-Transistor logic, using S8050 NPN transistors as the main component.
- Explored switching behaviour, voltage levels, and noise margins.
- Gained practical experience with parasitic effects and layout considerations. Improved confidence in debugging and verifying logic behaviour with test equipment.

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Soft Clipping Overdrive Guitar Pedal | Personal Project
- Designed and assembled an analogue pedal using op-amp based clipping stages.
- Simulated OA feedback and tone control in MATLAB/Falstad to aid in the decision making of part values before building on the breadboard.
- Learned how component placement influence clipping level, tone, stability, and frequency response.

Octave Up/Down Guitar Pedal | Personal Project (in progress)
- Constructing two individual octave up/down pedals. Utilising skills from knowledge about wave rectification and Flip-Flips to double or halve the frequency of an incoming signal, with the aim to combine operational amplifiers and transistor logic.

Bell Crank Lever – FEA Driven Design | University Coursework
- Modelled and iteratively refined and bell crank using Finite Element Analysis and topology-informed adjustments.
- Explored stress distribution, material efficiency, and geometric optimisation.
- Strengthened understanding of simulation-driven design decisions.

ECG Digital Filter | University Coursework
- Design and model a series of filters through iterative design techniques to denoise an ECG signal.
- Utilised MATLAB along with the Filter Design toolbox based on design requirements and restrictions to build a series of IIR and FIR filters. Removed problem-area frequencies such as mains hum, baseline wander and harmonic resonance. Demonstrated the mathematical understanding behind each filter design to justify the design choices.

GUI Exhaustive Search Optimisation | University Coursework
- Design and link a Graphical User Interface with an Exhaustive Search Optimisation programme to locate and return a list of viable cantilever beam options based on user input requirements.
- Primary focus on creating structured arrays and allocating memory for solutions.

TECHNICAL SKILLS

Analogue Electronics | Discrete component logic, op-amp biasing, signal conditioning, soft/hard clipping, breadboarding, soldering
Software and Simulation | MATLAB – Optimisation, GUI, numerical methods, Fourier Analysis, Digital Filtering, Simulink, SolidWorks, Fusion360
Programming | Python (Introductory), C++ (exposure through coursework), scripting, and functions
Tolls and Equipment | Oscilloscopes, Function Generators, Multimeters, Soldering