

## ALEXANDER MITCHELL

### Senior Electronics Engineer

#### Contact Information

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#### PROFESSIONAL SUMMARY

Accomplished Electronics Engineer with 7 years of comprehensive experience in analog/digital circuit design, embedded systems development, and electronic product lifecycle management across consumer electronics, telecommunications, and medical device industries. Expert in PCB design, microcontroller programming, and signal processing with proven track record of leading cross-functional teams and delivering innovative electronic solutions from concept to production in Sydney's dynamic tech ecosystem.

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#### CORE TECHNICAL SKILLS

##### Circuit Design & Analysis

- Advanced analog and digital circuit design and simulation
- Mixed-signal circuit development and integration
- Power management and battery systems design
- EMC/EMI compliance and signal integrity analysis

##### Design Tools & Software

- Altium Designer (Advanced Certified) - 5 years
- KiCad PCB design suite - 4 years
- SPICE simulators (LTSpice, PSpice, Cadence) - 6 years
- MATLAB/Simulink for system modeling - 5 years
- CST Microwave Studio for RF analysis - 3 years

##### Programming & Firmware

- C/C++ embedded programming - 6 years
- Python for automation and data analysis - 5 years
- VHDL/Verilog for FPGA development - 4 years
- Assembly language for microcontrollers - 5 years
- LabVIEW for test automation - 3 years

### **Microcontrollers & Processors**

- ARM Cortex-M series (STM32, NXP) - 5 years
- Microchip PIC and AVR microcontrollers - 4 years
- ESP32/ESP8266 for IoT applications - 3 years
- FPGA development (Xilinx, Altera) - 4 years

### **Communication Protocols**

- I2C, SPI, UART, CAN bus implementation
- Wireless protocols: WiFi, Bluetooth, LoRa, Zigbee
- Ethernet and TCP/IP stack development
- USB protocol implementation and debugging

### **Test Equipment Proficiency**

- Oscilloscopes (Keysight, Tektronix, Rohde & Schwarz)
- Spectrum analyzers and network analyzers
- Logic analyzers and protocol decoders
- Power supplies and electronic loads
- Environmental test chambers

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## **PROFESSIONAL EXPERIENCE**

### **ELECTRONICS ENGINEER | TechSphere Australia, Sydney**

*March 2020 - Present (4+ years)*

Lead electronics engineer responsible for designing and developing next-generation consumer electronics and IoT devices for Australian and Asia-Pacific markets.

#### **Key Achievements:**

- Led development of award-winning smart home automation system, generating \$2.3M revenue in first year
- Designed low-power wireless sensor network reducing power consumption by 40% compared to previous generation
- Managed cross-functional team of 6 engineers delivering 8 successful product launches
- Implemented Design for Manufacturing (DFM) processes reducing production costs by 25%
- Established automated testing protocols improving quality metrics by 35%

#### **Technical Responsibilities:**

- Design complex mixed-signal PCBs up to 12 layers with high-speed digital and sensitive analog sections
- Develop embedded firmware for ARM Cortex-M microcontrollers using C/C++
- Implement wireless communication systems (WiFi, Bluetooth LE, LoRa)
- Conduct signal integrity analysis and EMC compliance testing
- Mentor junior engineers and conduct technical design reviews

### **ELECTRONICS DESIGN ENGINEER | MedTech Innovations, Sydney**

*June 2017 - February 2019 (1 year 9 months)*

Specialized in medical device electronics design with focus on biosensor interfaces and patient monitoring systems.

#### **Key Achievements:**

- Designed FDA-compliant ECG acquisition system for portable cardiac monitors
- Developed ultra-low noise amplifier circuits achieving 0.5μV noise floor
- Successfully passed TGA regulatory approval for 3 medical devices
- Reduced component costs by 30% through strategic component selection and supplier negotiations

#### **Technical Responsibilities:**

- Design analog front-end circuits for biomedical signal acquisition
- Implement isolation barriers and safety systems for medical applications
- Develop embedded software for real-time signal processing

- Collaborate with clinical teams for device validation and testing
- Prepare technical documentation for regulatory submissions

## **JUNIOR ELECTRONICS ENGINEER | CommTech Solutions, Sydney**

*February 2018 - February 2020 (2 years)*

Focused on telecommunications equipment design and RF circuit development for 4G/LTE infrastructure.

### **Key Achievements:**

- Designed RF power amplifier modules for base station applications
- Implemented automated test systems reducing testing time by 50%
- Contributed to 4 patent applications for innovative RF circuit topologies
- Led thermal management optimization reducing junction temperatures by 20°C

### **Technical Responsibilities:**

- Design high-frequency RF circuits and impedance matching networks
- Develop PCB layouts for microwave frequencies up to 6 GHz
- Program automated test equipment using LabVIEW and Python
- Conduct thermal simulations and mechanical design coordination
- Perform EMC pre-compliance testing and troubleshooting

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## **EDUCATION & CERTIFICATIONS**

**Master of Electronics Engineering** | University of Technology Sydney (UTS) 2016-2017 - *Graduated with Distinction*

- Thesis: "Low-Power Wireless Sensor Networks for Industrial IoT Applications"
- Relevant coursework: Advanced Circuit Design, Digital Signal Processing, RF Engineering

**Bachelor of Electrical Engineering** | University of New South Wales (UNSW) 2012-2015 - *First Class Honours*

- Major: Electronics and Telecommunications
- Capstone Project: Smart Grid Communication System Design

### **Professional Certifications:**

- Altium Designer Advanced Certification (2020)
  - IPC-A-610 Certified Trainer - Electronics Assembly (2019)
  - Certified EMC Engineer (iNARTE) (2021)
  - Project Management Professional (PMP) - In Progress (2025)
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## **PROFESSIONAL DEVELOPMENT**

### **Continuous Learning & Training (2020-2025):**

- Advanced FPGA Design Workshop - Xilinx University (2024)
- Machine Learning for IoT Applications - UNSW Professional Development (2023)
- Leadership in Engineering Management - Engineers Australia (2023)
- 5G Technology and Implementation - Telstra Academy (2022)
- Agile Product Development for Hardware - Product School (2021)
- Medical Device Design Regulations Workshop - TGA (2020)

### **Industry Engagement:**

- Active member of Engineers Australia (EA) - Electronics & Telecommunications College
  - IEEE Member - Circuits and Systems Society
  - Regular presenter at Sydney Electronics Meetup Group
  - Mentor for UNSW Engineering Students through Industry Partnership Program
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## **KEY PROJECTS & ACHIEVEMENTS**

### **Smart Building IoT Platform (2023-2024)**

- Led 18-month development of comprehensive IoT solution for commercial buildings
- Integrated 15+ sensor types with mesh networking capability
- Achieved 99.7% uptime reliability and 5-year battery life
- Successfully deployed in 12 commercial buildings across Sydney

### **Portable Medical Diagnostic Device (2018)**

- Designed complete electronics system for point-of-care testing

- Achieved clinical-grade accuracy with consumer-friendly interface
- Reduced manufacturing cost by 40% while maintaining regulatory compliance
- Device now used in 50+ clinics across Australia

### **5G Base Station RF Module (2016-2017)**

- Developed high-efficiency power amplifier for 5G infrastructure
  - Achieved 45% power efficiency at 3.5 GHz frequency band
  - Module adopted by major telecommunications provider
  - Contributed to Sydney's early 5G network deployment
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## **TECHNICAL PUBLICATIONS & PATENTS**

### **Publications:**

- "Low-Power Design Techniques for IoT Sensor Networks" - IEEE Transactions on Circuits and Systems (2023)
- "EMC Considerations in High-Density PCB Design" - Electronics Australia Magazine (2022)

### **Patents:**

- "Adaptive Power Management System for Wireless Sensors" - Patent Pending (2024)
  - "Multi-Band RF Power Amplifier with Enhanced Efficiency" - AU Patent 2017123456 (2018)
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## **LANGUAGES & ADDITIONAL SKILLS**

### **Languages:**

- English (Native)
- Mandarin (Conversational)

### **Additional Skills:**

- Project management and team leadership
- Technical presentation and client communication
- Cost analysis and supplier management
- Regulatory compliance and quality assurance

- Agile development methodologies

**Professional Memberships:**

- Engineers Australia (Member #1234567)
- IEEE (Member #87654321)
- IPC (International Electronics Packaging Consortium)