Raghav MALIK

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Residence: Tokyo

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Product Systems Architect | Technical Lead | Product Delivery Specialist

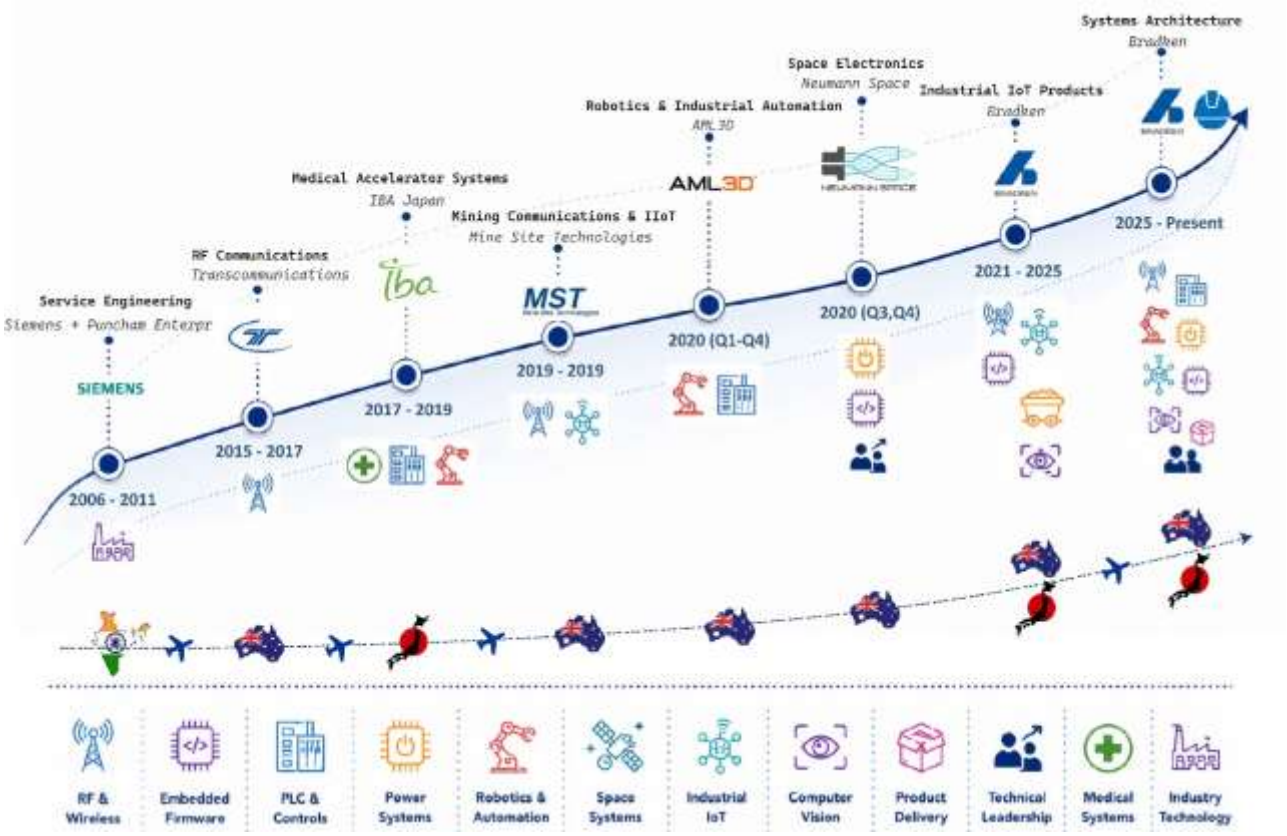
Electronics • RF Communications • Mechatronics • Industrial IoT • AI Vision • Harsh-Environment Products

SUMMARY

Product Systems Architect, Technical Lead, and Product Delivery Specialist with 12+ years of experience turning complex engineering concepts into validated products ready for field deployment and commercial use.

Core expertise spans electronics hardware, RF communications, mechatronics, mechanical integration, Industrial IoT, AI-enabled vision systems, robotics, aerospace electronics, mining technology, and medical accelerator systems.

Specialises in high-reliability products for harsh operating environments, leading architecture decisions, technical scope, validation, vendor coordination, field trials, deployment support, and production transition.



Career Highlights

- Led Bradken SmartRoller from field problem to commercial product, enabling multi-million-dollar global mining technology sales.
- Led Tooth Fairy / GET Tracker from field problem to deployed mining wear-monitoring product.
- Led GET Vision from prototype to commercial AI-enabled vision product for mining asset monitoring.
- Drove international validation and deployment across harsh mining environments, including Zambia, Finland, and Alaska.
- Acted as Bradken's sole dedicated hardware, electronics, RF, and mechatronics specialist across R&D programs, carrying technical ownership across multiple parallel product initiatives.
- Recovered a stalled space propulsion electronics programme by redesigning critical power and control architecture.
- Re-architected AML3D's robotic WAAM control platform, helping transition a research prototype toward commercial deployment.
- Delivered electromechanical integration of an €8M proton therapy accelerator across electrical, RF, mechanical, cooling, vacuum, and control systems.

ACQUIRED SKILLS AND KEY COMPETENCIES

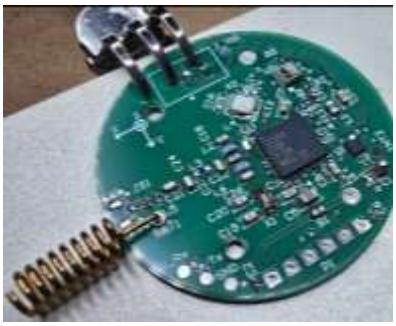
Product Architecture & Technical Leadership	
Systems Architecture	System architecture, product architecture, requirements definition, interface management, technical trade-offs
Product Development	Concept development, architecture ownership, prototyping, verification & validation, productisation
Technical Leadership	Architecture governance, technical leadership, multidisciplinary teams, mentoring, technical decision-making, technology roadmapping
Cross-Functional Leadership	Vendor management, customer engagement, deployment support, cross-functional collaboration
Electronics, RF & Connected Product Systems	
Electronics Design	Analog, digital & mixed-signal design, PCB design, power & low-power electronics
RF & Wireless	RF engineering, antenna systems, LTE, BLE, GNSS, MQTT, ISM-band communications
Embedded Systems	STM32, ATmega, TI CC13xx, Embedded C/C++, TI-RTOS, FreeRTOS, I2C, SPI, UART/USART, CAN
Connected Devices & IoT	Wireless sensor networks, condition monitoring, asset monitoring, industrial IoT
Hardware, Mechanical & Product Integration	Mechanical integration, thermal management, environmental sealing, shock & vibration design, sensor integration, hardware bring-up, reliability engineering and DFM/DFA
Product Validation & Deployment	
Test & Validation	RF characterisation, mixed-signal validation, DVT, EMC compliance
Test Equipment	VNA, Spectrum analyzer, Logic analyzer, Power meter
Field Deployment	Commissioning, acceptance testing, field validation, reliability engineering
Robotics, Automation & Manufacturing	
Robotics & Control	ABB, Fanuc, KUKA, PLC, Siemens Simatic, B&R IEC61131
Industrial Networks	Modbus, Profibus, PROFINET, Ethernet/IP, EtherCAT, DeviceNet
Manufacturing	CNC machining, WAAM, laser cutting, SLA/FDM 3D printing
Vision, AI & Data Systems	
Vision & AI Systems	OpenCV, YOLO, CVAT, computer vision, image annotation, neural networks, NI Vision (LabVIEW)
Applied AI	AI model training support, dataset preparation, particle size distribution prototyping, image-based monitoring systems
AI-Assisted Engineering	AI-assisted software development, agent-assisted workflows, engineering automation, technical documentation acceleration
Software & Tools	
Engineering Tools	Altium, KiCad, Eagle, LTspice, ANSYS HFSS, ANSYS Mechanical FEA
Programming	C, C++, Python, MATLAB
Platforms	Linux, Windows, Jira, Agile, SAP
Industry Experience	
Domain Expertise	Mining Technology, Aerospace, Healthcare (Radiotherapy), Manufacturing, Telecommunications

EMPLOYMENT HISTORY

10/2025 – Present ***Contract Product Systems Architect (IIoT)*** **Bradken (Hitachi), JAPAN**

Provides contract-based systems architecture, field deployment support, and independent commercial-grade IoT product development for mining technology programs. Focused on connected sensing platforms, RF communications, custom electronics, low-power architecture, validation, and deployment readiness for harsh operating environments.

KEY RESPONSIBILITIES



- Develop commercial-grade Industrial IoT sensing platforms incorporating BLE, Sub-GHz wireless communications, custom electronics, embedded integration, cloud connectivity, and ultra-low-power architecture.
- Provide specialist architecture support across requirements definition, system architecture, custom PCB design, hardware–firmware integration, prototyping, validation, and commercialisation planning.
- Support field deployment, validation, and technical troubleshooting of mining technology systems in harsh operating environments.
- Advise on technical investigations, architecture reviews, technology selection, reference platforms, and product development strategy.

Achievements

- Led development and commercial deployment of industrial IoT sensing technologies supporting multi-million-dollar mining operations across global sites.
- Designed and validated industrial IoT reference platforms incorporating custom hardware, embedded integration, BLE and Sub-GHz communications, supporting future product development, field deployment, and commercial engineering services.

Projects

- **Industrial IoT Sensor Platform (BLE & Sub-GHz) -** Development of wireless sensing platform incorporating custom PCB design, embedded integration, BLE, Sub-GHz communications, cloud connectivity, and ultra-low-power architecture.
- **Arctic Monitoring Trial (Alaska) -** Field deployment, validation, and technical support of industrial sensing technologies under extreme environmental conditions.
- **Mining Technology Architecture Consulting** - Systems architecture, embedded systems, RF communications, and industrial IoT support for product strategy, technical investigations, and technology roadmaps.

01/2021 – 09/2025 ***Senior Mechatronics Engineer (R&D)*** **Bradken (Hitachi), AUSTRALIA**

Functioned as technical product owner for high-reliability mining technology systems, translating field problems into product architectures, vendor scopes, validation plans, field trials, and commercially deployable Industrial IoT and AI-enabled monitoring products

KEY RESPONSIBILITIES

- Owned product definition and technical direction across multiple R&D programs, translating customer, field, and stakeholder requirements into product concepts, architecture decisions, technical scopes, and delivery plans.
- Led early-stage ideation, feasibility research, proof-of-concept development, and technical risk assessment before committing to larger engineering, vendor, or deployment investment.
- Defined system architecture across electronics hardware, RF communications, sensing, power, mechanical integration, environmental sealing, field installation, and deployment constraints.
- Prepared technical documentation, validation requirements, test plans, supplier scopes, and product evidence required to move concepts from prototype stage toward field deployment and commercial use.
- Identified, evaluated, and coordinated external vendors, supporting tender activity, supplier selection, technical reviews, delivery tracking, and acceptance against engineering requirements.
- Served as technical product lead during design reviews, vendor discussions, site trials, installation planning, troubleshooting, and deployment decisions.

- Oversaw lab validation, field testing, site installation, and international deployment activities across harsh mining environments, including direct involvement in Zambia, Finland, and Alaska.
- Mentored engineers and coordinated multidisciplinary contributors across electronics, RF, firmware, mechanical design, vendors, site teams, and product stakeholders.

Achievements

- Led architecture, development, and commercial deployment of an embedded RF sensing system for harsh mining environments, generating multi-million-AUD revenue while improving measurement resolution by 10× and reducing installation complexity and lifecycle cost.

Projects

- **SmartRoller** – Industrial IoT condition monitoring platform incorporating embedded RF sensing, thermal transfer optimisation, ruggedised mechanical design, environmental sealing, and deployment across mining operations in Australia, Finland and Zambia.
- **GET Vision** – Computer vision and AI-enabled monitoring platform for mining asset performance and operational insights.
- **Tooth Fairy** – rugged RF sensing platform for mining wear component monitoring.
- **Industrial Gateway** – LTE, GNSS, BLE, Sub-GHz RF, and MQTT-enabled connectivity platform for industrial IoT deployments.

06/2020 – 12/2020 ***Electronics Design Engineer*** (Technical Lead) **Neumann Space (NS), AUSTRALIA**

Technical lead for space-grade power and control electronics, owning architecture decisions, design trade-offs, verification activities, and electronics workstream delivery within a regulated aerospace environment.

KEY RESPONSIBILITIES

- Led redesign of control, power, and integration architecture to resolve stability, fault-handling, and maintainability issues.
- Directed electronics design, PCB development, prototyping, verification, and system-level testing across mission-critical subsystems.
- Guided engineers through design reviews, technical documentation, failure analysis, and aerospace-quality verification discipline.
- Collaborated with industry experts, vendors, and stakeholders to refine the product architecture and streamline rollout.

Achievements

- Resolved critical power supply and microcontroller challenges that had stalled progress for six months, accelerating the mission timeline by a month.

03/2020 – 01/2021 ***Robotics / Electronics Engineer*** **AML3D Ltd, AUSTRALIA**

Re-architected the electrical and control system of the Alchemy WAAM platform, helping transition a research-grade robotic additive manufacturing prototype toward commercially deployable operation

KEY RESPONSIBILITIES

- Integrated robotics, PLC/SCADA, ABB RAPID control logic, manufacturing workflows, and process reliability improvements.
- Improved system robustness, fault handling, repeatability, and maintainability for customer-facing industrial deployment.
- Supported operational procedures, quality systems, and commercial readiness for large-scale robotic metal printing.

Achievements

- Enabled transition of the Alchemy WAAM platform from research prototype toward commercially deployable industrial operation.

07/2019 – 12/2019 ***RF Systems Engineer*** **Mine Site Technologies (MST), AUSTRALIA**

RF systems role supporting underground and surface mining communications, tracking, and industrial network deployments in constrained operating environments.

KEY RESPONSIBILITIES

- Developed RF communication and tracking solutions aligned with client, site, and regulatory requirements.
- Supported architecture, BOM preparation, installation planning, commissioning, and acceptance testing.
- Built practical field experience in underground RF propagation, harsh-environment deployment, and mining communications.

02/2017 – 06/2019 ***Electromechanical Engineer*** **Ion Beam Applications (IBA), JAPAN**

Design-adjacent systems engineer responsible for integration, stabilisation, and commissioning of a high-energy particle accelerator system. Provided system-level feedback into electrical, RF, mechanical, and cooling design decisions during commissioning in a regulated medical environment.

KEY RESPONSIBILITIES

- Integrated and validated high-power electrical systems, RF chains, vacuum systems, cryogenic subsystems, and water-cooled infrastructure
- Identified system-level design gaps during commissioning and implemented corrective design and integration changes
- Acted as technical interface between design teams, site execution, and long-term operational requirements

Achievements

- Delivered an €8M proton therapy accelerator ahead of schedule by resolving system-level integration and commissioning risks across electrical, RF, mechanical, cooling, and control subsystems.

09/2015 – 01/2017 ***Electronics/RF Engineer*** **Trans Communication Pty Ltd, AUSTRALIA**

Early-career RF engineering role establishing foundations in mission-critical communications, RF compliance, system validation, and fault diagnosis.

KEY RESPONSIBILITIES

- RF and electronics fault isolation across radio front-ends, amplification stages, IF chains, and antenna systems
- RF system calibration, compliance testing, and commissioning in accordance with ACMA and industry standards
- Practical electronics design, repair, and validation under constrained documentation and time-critical conditions

11/2010 – 07/2011 ***Service Engineer*** **Pancham Enterprises, INDIA**

(Control valves and compressor turbines)

Early-career role providing hands-on exposure to industrial electromechanical systems, including control valves, compressor turbines, and associated electrical and electronic equipment. Built a practical foundation in equipment inspection, fault diagnosis, documentation discipline, and quality-driven maintenance practices within heavy industrial environments.

07/2010 – 10/2010 ***Customer Service Engineer*** **The Siemens Group, INDIA**

Entry-level engineering role supporting commissioning and maintenance of integrated building systems within a critical financial environment. Developed early exposure to structured engineering workflows, safety-critical systems, fault diagnosis, and cross-disciplinary coordination across electrical, electronic, and automation domains.

EDUCATION

2015	Antenna design (Professional Development intense course)	**The University of Queensland, Queensland, Australia**
2011 - 2013	Master of Engineering Management (Electronics & Electrical Engineering)	**The University of Queensland, Queensland, Australia**
2006 – 2010	Bachelor of Technology: Electronics and Communication Engineering (ECE)	**Jawaharlal Nehru Technological University, Andhra Pradesh, India**

PERSONAL INTERESTS

- Sports: Paragliding (Advanced licensed), SCUBA diving (Advanced licensed) and trekking.
- Engineering: Personal projects in power supply design, RF receiver creation, and commercial electronics repair. Expertise in 3D printing using FDM technology.

REFEREES

On Request