



Position Description

Position title	AI Product Engineer
Department / Division	Allied and Digital Health
Classification	Grade 7 Year 1 – Grade 7 Year 5 (AO71 – AO75)
Position reports to	Head of Intelligent Automation
No. of direct & indirect reports	n/a
Location	The Royal Children's Hospital, Flemington Road, Parkville
Risk category	Category C - works in a non-clinical setting, non-patient facing setting and only attends clinical areas infrequently

The Royal Children's Hospital
<p>The Royal Children's Hospital's (RCH) vision is <i>a world where all kids thrive</i>.</p> <p>RCH is located within the Melbourne Biomedical Precinct, with more than 45 world-class biomedical organisations and more than 50,000 of the brightest minds working together to make the Precinct number one in the Asia Pacific region for health, education, research, and training. Within this, RCH is also a cornerstone member of the Melbourne Children's Campus, partnering with Murdoch Children's Research Institute, The University of Melbourne Department of Paediatrics and The Royal Children's Hospital Foundation. Each organisation contributes to a paediatric academic health centre which is greater than the sum of its parts.</p> <p>RCH has cared for the children and young people of Victoria for more than 150 years since it was founded in 1870. A full range of paediatric and adolescent health services are provided plus tertiary and quaternary care for the most critically ill and medically complex patients in Victoria, Tasmania, southern NSW and other states around Australia and overseas. The RCH is the only provider of heart transplant services and CAR T-cell therapy for paediatrics in Australia. RCH is an effective advocate for patients and their families with a particular focus on vulnerable children and increasingly, mental health in young people. The hospital also supports many health promotion and prevention programs. The Hospital has more than 6,000 staff, a budget of \$850M, 12 wards and 350 beds. Annually, the RCH has 300,000+ Specialist Clinic appointments, 90,000+ Emergency Department presentations and 20,000 elective surgeries.</p> <p>We work collaboratively with hospitals to deliver the right care, in the right place, at the right time. The RCH is committed to the Child Safe Standards https://www.rch.org.au/quality/child-safety/.</p> <p>RCH enjoys high employee engagement and is committed to staff safety and a positive culture through enactment of our Compact.</p> <p>Further information on RCH is available at www.rch.org.au</p>

ROLE CONTEXT
Digital Health has been building an AI capability that applies directly to how the hospital operates and delivers care. The problems are clinical and operational — revenue integrity, clinical workflow, diagnostic support, surveillance,

service design — and the work reaches patients. Early results have been significant, and AI is now being embedded as an integral part of how work is performed across the hospital.

The AI Product Engineer role sits within a small team that operates with a high degree of autonomy and collective ownership. The team works together to move AI from validated concept through to production — sharing problems, reviewing approaches, and building on each other's work. The position reports to the Head of Intelligent Automation and works closely with engineers, clinical specialists, and operational staff. The technology stack is Python and React with FastAPI, deployed primarily on Azure, using Azure AI Foundry and AWS Bedrock as the primary AI platforms. AI-assisted development tools (including Claude Code, GitHub Copilot, and Cursor) are used as part of standard practice.

ROLE PURPOSE

The AI Product Engineer works across the full pipeline, from evaluating whether an AI-based approach is suitable for a given problem, through designing the appropriate orchestration architecture, to building and delivering the end product. The role requires consideration about how to apply AI effectively: some problems are best addressed with a single well-structured prompt, others require layered chains of prompts with validation steps between them, agent-based workflows with tool use, complex decision trees that combine AI reasoning with deterministic logic, or hybrid architectures where AI handles areas requiring judgment and conventional code provides precision.

KEY ACCOUNTABILITIES

Technical Responsibilities

- Design, build, and optimise AI orchestration architectures for clinical and operational problems, including multi-step prompt chains, agent-based workflows with tool use, retrieval-augmented generation, complex decision trees, and hybrid systems that combine AI reasoning with deterministic logic.
- Build and deploy end-to-end AI-powered systems from data ingestion through AI processing to the interface where clinicians or operational staff interact with outputs, spanning applications, automation layers, notification systems, and API endpoints.
- Develop, test, and refine prompt chains and AI routines that process clinical and operational data using frontier language models, iterating on structure, sequencing, and validation steps to achieve reliable and accurate outputs.
- Integrate with hospital data sources including HL7 feeds, Epic EMR data, and other clinical and operational systems, applying considered approaches to data ingestion, transformation, and security to support AI processing and product delivery.
- Lead CI/CD, version control, and secure deployment practices across the AI product development lifecycle, standardising development environments to ensure reproducibility, environment separation, and reliable deployment to Azure infrastructure.

Customer Service / Stakeholder Management

- Lead cross-functional collaboration with the Head of Intelligent Automation and clinical, operational, and technical stakeholders to direct the design and delivery of AI solutions aligned with hospital priorities.

- Evaluate the feasibility of AI-based approaches in partnership with clinical and operational staff, synthesising domain expertise and technical constraints to determine appropriate architectures, achievable accuracy levels, and realistic delivery commitments.
- Provide expert technical guidance and strategic advice across EMR teams, clinicians, and operational staff, translating complex AI concepts for diverse audiences and ensuring alignment on technical approach, delivery strategy, and expected outcomes.

Quality

- Implement validation, testing, and monitoring frameworks to ensure AI outputs are accurate, reliable, and fit for clinical and operational use, including benchmarking, failure mode analysis, and iterative refinement of prompt chains and model configurations.
- Maintain structured technical documentation for AI architectures, prompt designs, deployment configurations, and development standards, supporting knowledge transfer and the ongoing maintainability of production systems.
- Apply best practices in AI engineering and software development including code review, security-conscious design, and AI-assisted development tools (such as Claude Code, GitHub Copilot, and Cursor) to maximise the quality and pace of delivery.

Leadership / Strategy

- Drive the AI product roadmap and technical strategy by translating the hospital's clinical and operational priorities into actionable AI capabilities, contributing to long-term plans for embedding AI across hospital functions.
- Champion responsible and effective AI adoption by proactively identifying opportunities to improve scalability, reliability, and automation of AI systems, and spearheading the uptake of emerging AI platforms and engineering practices across the team.
- Apply creative and considered problem-solving to novel clinical and operational challenges, identifying and implementing AI approaches that do not have established solutions, including hybrid architectures and innovative combinations of AI reasoning and deterministic logic.

Teamwork and People Management

- Foster a high-performance team culture by contributing to technical mentorship, knowledge-sharing, and peer review within the AI team, elevating the collective capability to design, build, and operate AI products effectively.
- Drive cross-functional engagement with IT, governance, clinical, and operational stakeholders to ensure AI products are developed and deployed with appropriate organisational alignment, seamless integration, and sustained adoption.

QUALIFICATIONS AND EXPERIENCE

Essential:

- Tertiary qualifications in Computer Science, Software Engineering, Information Technology, or a related discipline, and/or significant relevant industry experience.

- Demonstrated experience building and deploying production software systems, with strong capability across backend development, API design, and at least one of frontend development or infrastructure.
- Practical experience with AI orchestration in a production context, including prompt engineering, multi-step prompt chains, agent architectures, retrieval-augmented generation, or the design of hybrid systems combining AI with deterministic logic. Experience should demonstrate considered thinking about how to structure AI workflows effectively.
- Proficiency in Python and React, with experience building APIs using FastAPI or equivalent frameworks.
- Experience with Azure cloud platform including deployment, compute management, and API services. Familiarity with AWS (particularly Bedrock) or GCP (Vertex AI) is desirable.
- Proficiency in the use of AI-assisted development tools (such as Claude Code, GitHub Copilot, or Cursor) as part of a regular workflow.
- Demonstrated experience working across the end-to-end product lifecycle, from feasibility assessment through to production deployment without reliance on separate specialists for each layer.
- Proven leadership experience contributing as a senior team member, with the ability to work with initiative and autonomy, manage competing workstreams, and guide technical direction within a collaborative team environment.
- An understanding of the healthcare sector and the ability to work effectively with clinical stakeholders, translating domain expertise into technical requirements.

Desirable:

- Experience designing agent-based AI systems, tool-use patterns, or complex multi-model workflows.
- Experience with healthcare data standards (HL7, FHIR) or healthcare information systems.
- Experience with Epic EMR or other electronic medical record integrations.
- Experience evaluating AI approaches for feasibility and fitness-for-purpose, including benchmarking, accuracy assessment, and failure mode analysis.
- Experience working in small, high-ownership team environments where adaptability and pace of delivery are valued.

KEY SELECTION CRITERIA

- Demonstrated ability to assess a problem and determine the appropriate AI architecture, whether that involves a single prompt, a chain, an agent, a hybrid approach, or an alternative method. Ability to articulate why one approach is more suitable than another.
- Demonstrated ability to take a problem from data through AI processing through to a working product without requiring separate specialists for each layer.
- A track record of delivering working software at pace, iterating based on feedback, and making appropriate trade-offs between quality and speed of delivery.
- AI-native working style: evidence that AI-assisted development tools are an established part of how you work and are central to your productivity.
- Ability to work with colleagues to assess feasibility, design an approach, and iterate toward a solution.

- Ability to work effectively with clinical staff who are experts in their domain, translating between clinical needs and technical implementation.
- Demonstrated ability to manage multiple concurrent workstreams and deliver working software within a team environment.

OTHER REQUIREMENTS

- Employees are required to undertake a National Criminal Record Check and a Working with Children Check prior to commencing employment
- Employees are required to maintain a valid Working with Children Check throughout their employment
- A current, full driver's licence for the State of Victoria which is appropriate for the type of vehicle being driven, and comply with any restrictions on their licence (e.g. wearing glasses) while undertaking hospital duties (If applicable)
- Employees are required to maintain compliance with RCHs "Staff Immunisation - Prevention of Vaccine Preventable Diseases" procedure.

IMPORTANT INFORMATION

All employees are required to adhere to the Royal Children's Hospital Values:

- Curious - We are creative, playful and collaborative
- Courageous - We pursue our goals with determination, ambition and confidence
- Inclusive - We embrace diversity, communicate well, build connections and celebrate our successes together
- Kind - We are generous, warm and understanding

RCH COMPACT

All new and existing employees commit to the RCH Compact to contribute to a strong and respectful culture.

- We do better work caring for children and families when we also care for each other
- I bring a positive attitude to work – I share, I laugh, I enjoy other's company
- I take responsibility for my behaviour and its impact on others
- I am curious and seek out ways to constantly learn and improve
- I celebrate the good stuff, the small stuff, the big stuff – it all matters
- I speak up when things aren't right
- I value the many different roles it takes to deliver great patient care
- I actively listen because I want to understand others and make better decisions
- I am inclusive and value diversity
- When it comes to teamwork, I don't hold back – I'm all in

QUALITY, SAFETY AND IMPROVEMENT

RCH employees have a responsibility and accountability to contribute to the organisation's commitment to Quality, Safety and Improvement by:

- Acting in accordance and complying with all relevant Safety and Quality policies and procedures
- Identifying risks, reporting and being actively involved in risk mitigation strategies
- Participating in and actively contributing to quality improvement programs
- Complying with the requirements of the National Safety & Quality Health Service Standards



- Complying with all relevant clinical and/or competency standards
- Complying with the principles of Patient and Family Centred Care that relate to this position

The RCH is committed to a diverse and inclusive workforce. We encourage applications from Aboriginal and Torres Strait Islander people, people from culturally and/or linguistically diverse backgrounds, all members of the LGBTQI community and people with disability.

Position description last updated

June 2026