

Engineering Manager Algorithms and Biomedical Informatics

SPD-XXX

Rev 1.0

i Reporting

<i>Dept. / Team / Function</i>	Applied Research
<i>Line and Personnel Issues</i>	VP Technology, Applied Research
<i>Technical Issues</i>	VP Technology, Applied Research

ii Primary Objective

The Engineering Manager – Algorithms and Biomedical Informatics will undertake applied research and development in the areas of biomedical signal processing, pattern recognition and biomedical informatics. The algorithms developed may be used in a range of diagnostic and therapeutic applications, such as sleep disorder breathing and other respiratory disorders, as well as co-morbidities such as congestive heart failure and diabetes and chronic disease management.

iii Job Environment

The Applied Research Department is headquartered in Sydney and is focused on identifying, evaluating and developing concepts that lead to significant innovation in ResMed products. The Applied Research Department will expand its operations to Singapore, where this role is to be based, to leverage locally available skills and expertise.

iv Responsibilities and Accountabilities

- Research and development of biomedical signal processing and pattern recognition algorithms.
- The supervision of research projects and mentoring of more junior engineers working in the team.
- Translating algorithms into computer code suitable for testing on the bench and in a clinical setting.
- Writing of documents for use in the preparation of intellectual property.
- Writing of documents that clearly explain how algorithms should be implemented, verified and validated.
- Working with other groups within ResMed, in particular Applied Research, Sydney and ResMed Sensor Technologies, Dublin.
- Monitoring the literature of interest, broadly in the areas of medicine and engineering.
- Understanding regulatory requirements such as those mandated by the FDA.
- Outreach to Singaporean universities and research institutes.
- Working within the ResMed Quality system, standards and maintaining training requirements.
- Being ever mindful of the requirements of the wider market and ResMed stakeholders.

- Promoting safe working environment within OH&S guidelines

v Core Competencies

<i>Competency</i>	<i>Contribution</i>
Communication	<ul style="list-style-type: none"> • Listens to, and actively solicits, the opinions of others • Communicates in an open, candid and direct manner • Accepts developmental feedback openly and non-defensively • Protects confidential information where appropriate
Talent Development	<ul style="list-style-type: none"> • Has a solid understanding of their own strengths and developmental needs • Addresses developmental needs and builds skills required by the organization • Shares new learning with others • Stays current in area of expertise
Business Acumen	<ul style="list-style-type: none"> • Applies sound analytical thinking to problem solving and decision making • Effectively balances short- and long-range priorities and decisions
Team work	<ul style="list-style-type: none"> • Demonstrates willingness to support team/manager decisions that may not align with own views • Resolves conflict with others in a constructive manner • Works collaboratively within and across business, functions and regions
Results Orientation	<ul style="list-style-type: none"> • Achieves the results they agree to accomplish • Recognizes the need to track and measure performance and results
Leadership	<ul style="list-style-type: none"> • Demonstrates ownership of challenges or issues and takes appropriate action • Demonstrates willingness to take initiative, solve problems and make decisions as if the leader was there
Customer Focus	<ul style="list-style-type: none"> • Committed to providing high-quality products and services
Innovation	<ul style="list-style-type: none"> • Thinks independently and challenges the way we do things • Incorporates new ideas into current practices and area of expertise • Seeks opportunities to learn and develop within current role
Interpersonal Effectiveness	<ul style="list-style-type: none"> • Acts in accordance with ResMed's ethical principles • Values people's differences in background, culture, pursuit of work/life balance and perspective • Is open to receiving constructive feedback about self

vi Functional Competencies

Competency | *Contribution*

<p>Systems Thinking</p>	<ul style="list-style-type: none"> • Understands the importance of a system view and considers the impact of Applied Research (AR) activities on the ResMed business. • Determines viability of research opportunities against the broader ResMed business context. • Synthesizes data from a range of sources to gain a holistic understanding of research opportunities.
<p>Developing Ideas</p>	<ul style="list-style-type: none"> • Demonstrates a sense of curiosity and proactively seeks opportunities to generate and modify innovations. • Generates original ideas within established timeframes, yet determines the need for additional time resources where appropriate. • Works autonomously and / or in teams to generate innovations and insights. • Is prepared to champion and display conviction in own ideas. • Expresses complex ideas in a way that facilitates others' understanding. • Acknowledges others' ideas and appreciates when these are more effective than own ideas. • Stays abreast of research literature to ensure current knowledge of research trends and innovations. • Is aware of the role of patent strategies in protecting innovations.
<p>Innovation</p>	<ul style="list-style-type: none"> • Acknowledges medical device development process when implementing innovations. • Manages innovation risks creatively. • Supports the patent process, by translating clinical / technical information into an accepted legal framework
<p>Evaluation</p>	<ul style="list-style-type: none"> • Multidisciplinary: understands clinical, ethical and technical research impacts on patients. • Writes protocols for trials of usability and clinical outcomes; understands statistical methods and ethical research. • Has sound technical writing skills and communicates product (clinical) capability in ResMed accepted formats. • Reports product limits and clearly reinforces constraints, providing timely follow-up where appropriate.
<p>Education</p>	<ul style="list-style-type: none"> • Consolidates clinical information to prepare education materials and publication submissions. • Represents ResMed in delivering education to internal and external stakeholders. • Seeks opportunities to share educational experiences with others.

vii Position Challenges

- Optimisation of algorithm complexity vs. accuracy vs. implementation cost.

- Human pathophysiological diversity.
- Implementing robust software for use in research programs with a minimum of review and other formal process

viii Position Specific Skills

- Experience with the development of algorithms for biomedical signal processing and pattern recognition.
- Experience with algorithm development in Matlab or a similar environment.
- Good software development skills (for instance in C or C++).
- Database skills and experience, including experience with data mining techniques and statistical analysis.
- A background in or exposure to biomedical engineering, medical science or physiology.
- Good technical writing and presentation skills.

ix Qualifications and Experience

Minimum

- A degree in Biomedical Engineering, Electrical Engineering, Computer Science, Applied Mathematics, Applied Physics or related fields.

Preferred

- Post-graduate research experience (Masters or PhD) in a field encompassing biomedical signal processing and pattern recognition or biomedical informatics.
- Alternatively 5 – 10 years relevant industry experience, preferably within the medical device industry. Relevant experience gained in other industries, such as Finance, may also be considered.

x Group Assignments

<i>Training Group</i>	<i>Occupational Dictionary</i>
TAR003	AOD-001

xi Revision History

<i>Revision</i>	<i>Date</i>	<i>Prepared by</i>
1.0	17 th March 2014	Steven Farrugia