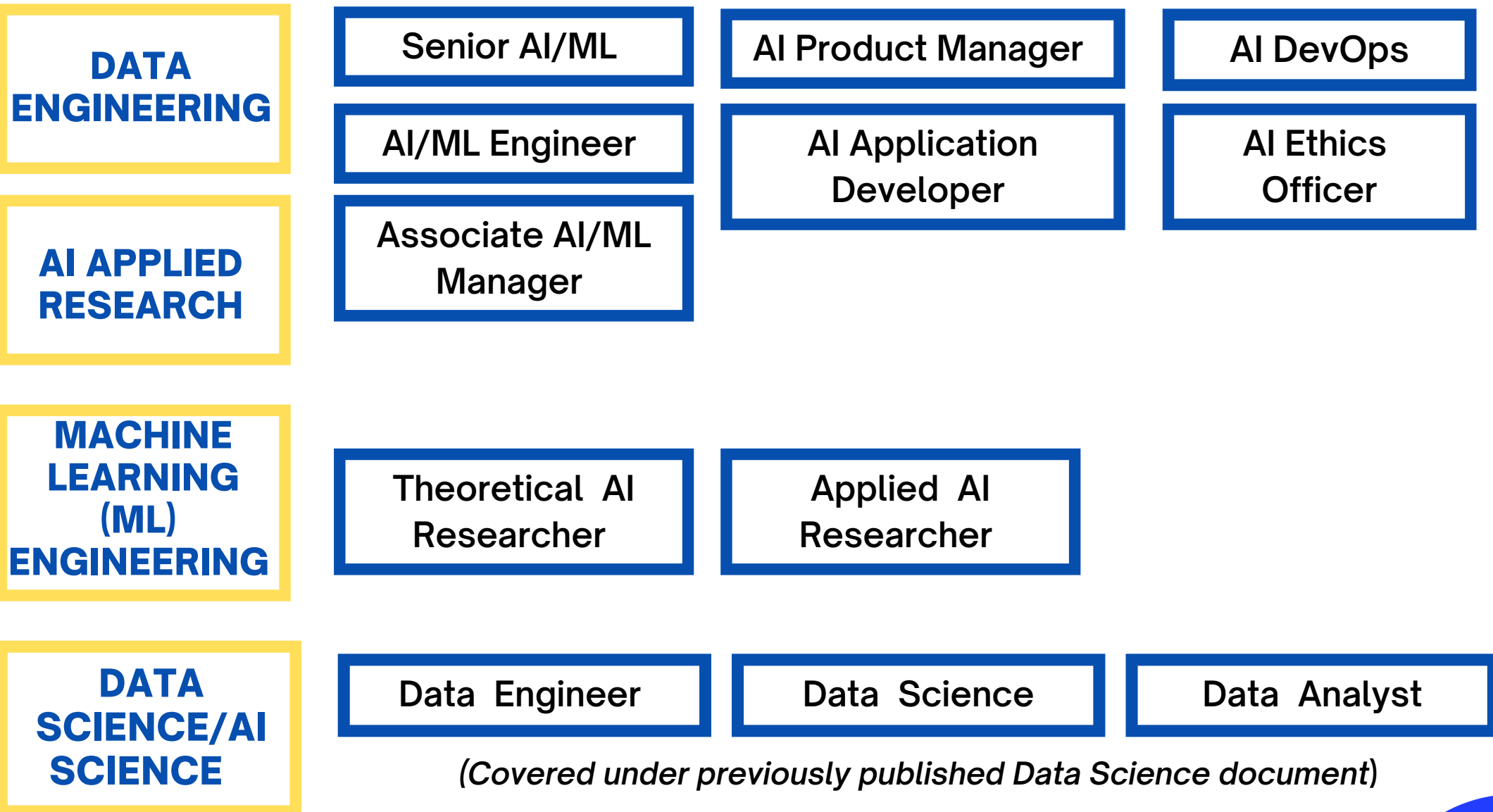




INDUSTRIAL SKILLS FRAMEWORK (IndSF) ARTIFICIAL INTELLIGENCE



CAREER PATHWAYS - ARTIFICIAL INTELLIGENCE (AI)





CAREER PATHWAYS

Associate AI/ML Engineer



AI/ML Engineer

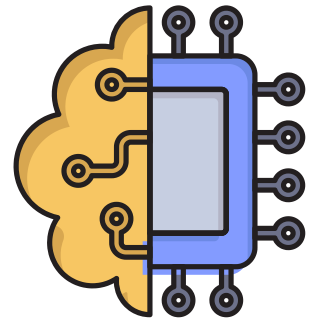


Senior AI/ML Engineer



JOB DESCRIPTION

- Assists in the definition and management of requirements
- Assists in developing and implementing data pipelines and data stores
- Performs administrative tasks to provide accessibility, retrievability, security, and protection of data.
- Applies given machine learning techniques to data, under the guidance of technical leadership.
- Analyses and reports findings and remediate simple issues using algorithms implemented in standard software frameworks and tools.
- Applies given data science techniques to data with guidance
- Designs, codes, verifies, tests, documents, amends and refactors simple to moderate programs/scripts.
- Applies agreed standards and tools to achieve a well-engineered result.
- Monitors and reports on progress. Identifies issues related to software development activities.
- Proposes practical solutions to resolve issues.
- Collaborates in reviews of work with others as appropriate.
- Establishes, modifies, or maintains simple data structures and associated components.
- Applies standard data modeling and design techniques based on a detailed understanding of requirements.
- Communicates the details of data structures and associated components to others using the data structures and associated components.
- Uses a visualization product, as guided, to design and create data visuals.
- Engages with the target user to prototype and refine specified visualizations.



ASSOCIATE AI/ML ENGINEER

ESSENTIAL SKILLS

- Requirement definition (REQM)
- Stakeholder relationship management (RLMT)
- Data engineering (DENG)
- Machine learning (MLNG)
- Data science (DATS)
- Programming/Software development (PROG)
- Data modelling and design (DTAN)
- Data visualisation (VISL)
- Emerging technology monitoring (EMRG)

COMMON CERTIFICATION

- Professional certification related to AI or ML .
- Diploma of IT/CS/IS/SE (with AI/ML elements).
- Degree of IT/CS/IS/SE (with AI/ML elements).
- Post-graduate (major in AI/ML).
- Degree in Non-CS, e.g. Degree in Math or Engineering.
- MBA Degree will be helpful to develop business and management
- Knowledge and skills
- Tools specific certification

SOFTS SKILLS

- Problem solving
- Communication
- Team work
- Self-development
- Quality conscious



COMMON TOOLS

- noSQL & Relational Database Management System (RDBMS) databases
- Extract Transform and Load (ETL) Tool
- Shell Scripting Tool
- Machine Learning algorithms
- Workbench\$ Programming Language
- Data Visualization Tool
- Natural Language Processing (NLP) Tools
- Computer Vision Tool
- Data Streaming Tool
- AI/ML Cloud services tools
- Project management software
- Other Artificial Intelligence Tool



CAREER PATHWAYS

Associate AI/ML Engineer



AI/ML Engineer

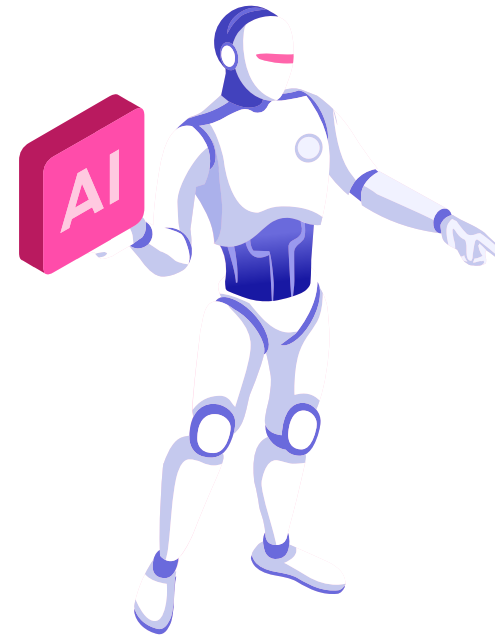


Senior AI/ML Engineer



JOB DESCRIPTION (CON'T)

- Defines and manages scoping, requirements definition and prioritisation activities for small-scale changes and assists with more complex change initiatives
- Follows agreed standards and applies appropriate techniques to elicit and document detailed requirements.
- Provides constructive challenge to stakeholders as required.
- Reviews requirements for errors and omissions.
- Prioritises requirements and documents traceability to source.
- Provides input to the requirements baseline.
- Investigates, manages and applies authorised requests for changes to base-lined requirements, in line with change management policy.
- Deals with problems and issues, managing resolutions, corrective actions, lessons learned, and the collection and dissemination of relevant information.
- Designs and implements data pipelines and data stores to acquire and prepare data.
- Applies data engineering standards and tools to create and maintain data pipelines and extract, transform and load data.
- Carries out routine data quality checks and remediation.
- Applies existing machine learning techniques to new problems and datasets.
- Evaluates the outcomes and performance of machine learning systems.
- Identifies issues and recommends improvements to machine learning systems and the data they use.

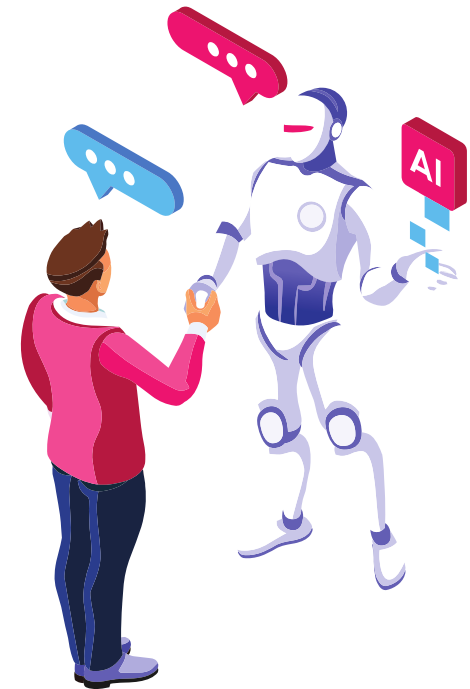




JOB DESCRIPTION (CON'T)



- Contributes to the development, evaluation, monitoring and deployment of machine learning systems.
- Understands and applies rules and guidelines specific to the industry, and anticipates risks and other implications of modelling.
- Applies existing data science techniques to new problems and datasets using specialised programming techniques.
- Selects from existing data sources and prepares data to be used by data science models.
- Selects from existing data sources and prepares data to be used by data science models.
- Evaluates the outcomes and performance of data science models.
- Identifies and implements opportunities to train and improve models and the data they use.
- Publishes and reports on model outputs to meet customer needs and conforming to agreed standards.
- Designs, codes, verifies, tests, documents, amends and refactors complex programs/scripts and integration software services.
- Contributes to the selection of software development methods, tools and techniques.
- Applies agreed standards and tools to achieve a well-engineered result.
- Monitors and reports on progress. Identifies issues related to software development activities. Proposes practical solutions to resolve issues.
- Participates in reviews of own work and leads reviews of colleagues' work.
- Applies standard data modelling and design techniques based upon a detailed understanding of requirements.
- Establishes, modifies and maintains data structures and associated components.
- Communicates the details of data structures and associated components to others using the data structures and associated components.
- Implements algorithms developed by others.
- Advises on the effectiveness of specific techniques, based on project findings and wider research.





JOB DESCRIPTION

- Investigates enterprise data requirements where there is some complexity and ambiguity.
- Plans own data modelling and design activities, selecting appropriate techniques and the correct level of detail for meeting assigned objectives.
- Provides advice and guidance to others using the data structures and associated components.
- Uses a visualization product, as guided, to design and create data visuals.
- Engages with the target user to prototype and refine specified visualisations.
- Supports monitoring of the external environment and assessment of emerging technologies.
- Contributes to the creation of reports, technology roadmapping, and the sharing of knowledge and insights.
- Participates in reviews of own work and leads reviews of colleagues' work.
- Applies standard data modelling and design techniques based upon a detailed understanding of requirements.
- Establishes, modifies and maintains data structures and associated components.
- Communicates the details of data structures and associated components to others using the data structures and associated components.
- Investigates enterprise data requirements where there is some complexity and ambiguity.
- Plans own data modelling and design activities, selecting appropriate techniques and the correct level of detail for meeting assigned objectives.
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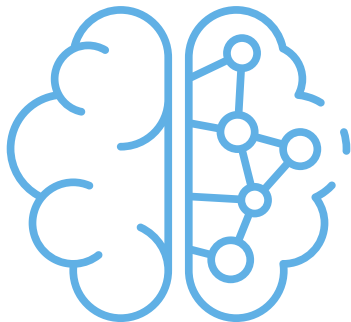
ESSENTIAL SKILLS

- Requirement definition (REQM)
- Stakeholder relationship management (RLMT)
- Data engineering (DENG)
- Machine learning (MLNG)
- Data science (DATS)
- Programming/Software development (PROG)
- Data modelling and design (DTAN)
- Data visualisation (VISL)
- Emerging technology monitoring (EMRG)



COMMON TOOLS

- noSQL & Relational Database Management System (RDBMS)
- Extract Transform and Load (ETL) Tool
- Shell Scripting Tool
- Machine Learning algorithms
- Workbench Programming Language
- Data Visualization Tool
- Natural Language Processing (NLP) Tools
- Computer Vision Tool
- Data Streaming Tool
- AI/ML Cloud services tools
- Other Artificial Intelligence Tool
- Software project management



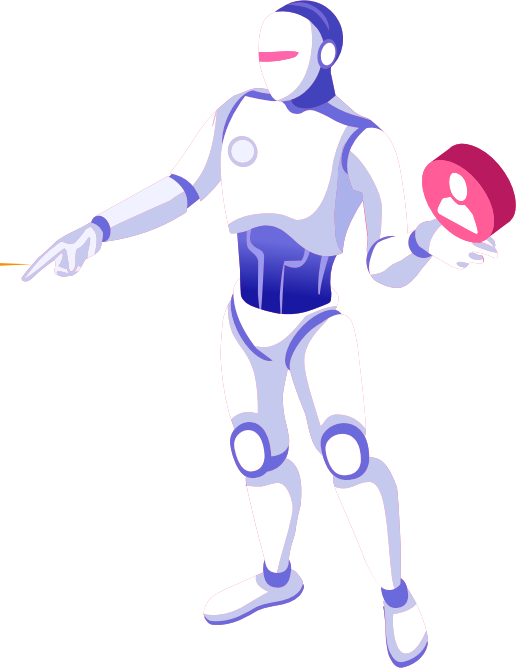
SOFTS SKILLS

- Organizing and planning
- Developing people
- Problem solving
- Communication
- Team work
- Self-development
- Quality conscious



COMMON CERTIFICATION

- Professional certification related to AI or ML with 2 years of relevant working experiences.
- Diploma of IT/CS/IS/SE (with AI/ML elements) with 2 years of relevant working experiences.
- Degree of IT/CS/IS/SE (with AI/ML elements) with 2` years of relevant working experiences
- Post-graduate (major in AI/ML) with 2 years of relevant working experiences
- Degree in Non-CS, e.g. Degree in Math or Engineering with 2 years of experiences in programming
- MBA Degree will be helpful to develop business and management knowledge & skills
- Tools specific certification





CAREER PATHWAYS

Associate AI/ML Engineer



AI/ML Engineer

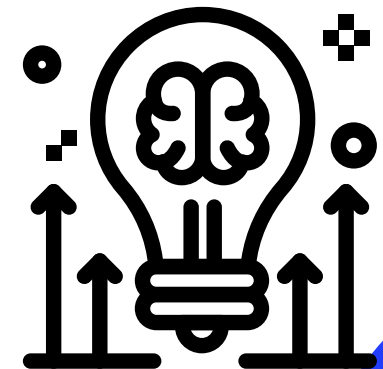
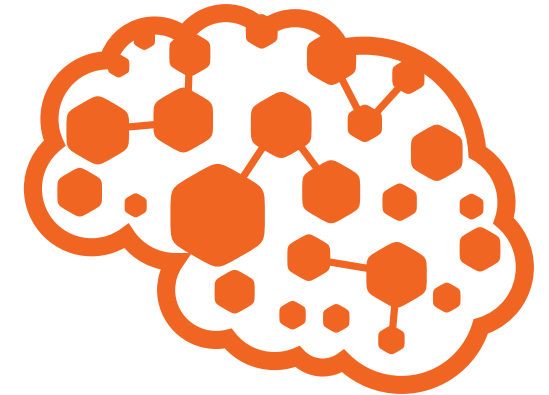


Senior AI/ML Engineer



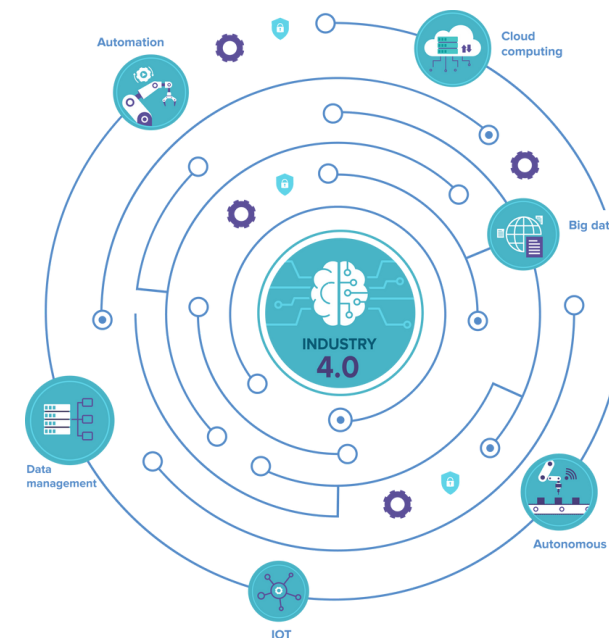
JOB DESCRIPTION

- Plans and drives scoping, requirements definition and prioritization activities for medium to large, complex initiatives.
- Selects, adopts and adapts appropriate requirements definition and management methods, tools and techniques.
- Contributes to the development of organisational methods and standards for requirements management.
- Obtains input from and agreement to requirements from a diverse range of stakeholders.
- Negotiates with stakeholders to manage competing priorities and conflicts.
- Establishes requirements baselines.
- Ensures changes to requirements are investigated and managed.
- Deals with problems and issues, managing resolutions, corrective actions, lessons learned, and the collection and dissemination of relevant information.
- Helps develop and enhance customer and stakeholder relationships.
- Designs, implements, and maintains complex data engineering solutions to acquire and prepare data.
- Creates and maintains data pipelines to connect data within and between data stores, applications and organisations.



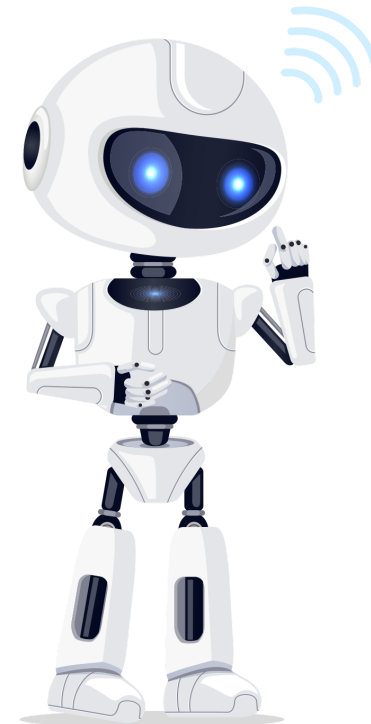
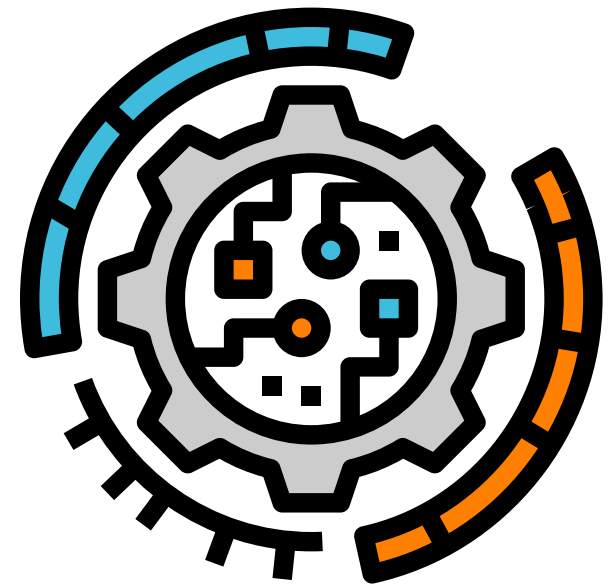
JOB DESCRIPTION (CON'T)

- Carries out complex data quality checking and remediation.
- Designs, implements, tests and improves machine learning architectures and systems.
- Selects techniques based on a breadth of knowledge of the strengths, weaknesses and expected performance of different approaches.
- Establishes good practice in the development, evaluation, monitoring and deployment of machine learning systems.
- Leads the development of new approaches and organisational capabilities to design, train, and evaluate machine learning systems.
- Sets standards and guidelines for the application and traceability of machine learning systems to business problems, and oversees their implementation.
- Designs and oversees organisational policies on the creation, training and use of machine learning systems.
- Investigates the described problem and dataset to assess the usefulness of data science and analytics solutions.
- Applies a range of data science techniques and uses specialised programming languages.
- Understands and applies rules and guidelines specific to the industry, and anticipates risks and other implications of modelling.
- Designs, codes, verifies, tests, documents, amends and refactors complex programs/scripts and integration software services.
- Contributes to the selection of the software development methods, tools and techniques.
- Applies agreed standards and tools to achieve well-engineered outcomes.
- Participates in reviews of own work and leads reviews of colleagues' work.

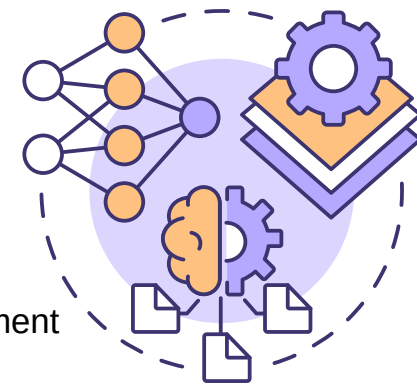


JOB DESCRIPTION

- Investigates enterprise data requirements where there is some complexity and ambiguity.
- Plans own data modelling and design activities, selecting appropriate techniques and the correct level of detail for meeting assigned objectives.
- Provides advice and guidance to others using the data structures and associated components.
- Applies a variety of visualisation techniques and designs the content and appearance of data visuals.
- Contributes to exploration and experimentation in data visualisation.
- Monitors the external environment to gather intelligence on emerging technologies.
- Assesses and documents the impacts, threats and opportunities to the organisation.
- Creates reports and technology roadmaps and shares knowledge and insights with others.



SENIOR AI/ML ENGINEER



✓ ESSENTIAL SKILLS

- Requirement definition (REQM)
- Stakeholder relationship management (RLMT)
- Data engineering (DENG)
- Machine learning (MLNG)
- Data science (DATS)
- Programming/Software development (PROG)
- Data modelling and design (DTAN)
- Data visualisation (VISL)
- Emerging technology monitoring (EMRG)

✓ COMMON TOOLS

- noSQL & Relational Database Management System (RDBMS)
- Extract Transform and Load (ETL) Tool
- Shell Scripting Tool
- Machine Learning Workbench
- Programming Language
- Data Visualisation Tool
- Natural Language Processing (NLP) Tool
- Computer Vision Tool
- Data Streaming Tool
- Other Artificial Intelligence Tool
- Software project management

✓ COMMON CERTIFICATION

- Professional certification related to AI or ML with 5 years of relevant working experiences.
- Diploma of IT/CS/IS/SE (with AI/ML elements) with 5 years of relevant working experiences.
- Degree of IT/CS/IS/SE (with AI/ML elements) with 5 years of relevant working experiences
- Post-graduate (major in AI/ML) with 5 years of relevant working experiences
- Degree in Non-CS, e.g. Degree in Math or Engineering with 5 years of experiences in programming
- MBA Degree will be helpful to develop business and management knowledge and skills
- Tools specific certification

✓ SOFTS SKILLS

- Organising and planning
- Developing people
- Problem solving
- Communication
- Teamwork
- Self-development
- Quality conscious
- Transdisciplinary thinking
- Project management



CAREER PATHWAYS

AI/ML researcher



Senior AI/ML researcher



JOB DESCRIPTION

- AI Research Scientists have tasks of designing, undertaking, analysing information and developing a new novel AI modeling (abstract) or ML/DL algorithm.
- These individuals are experts in multiple AI disciplines, including applied math, machine learning, deep learning, and computational statistics.
- Engage and collaborate with industry players, research institutes and institutes of higher learning to assess the maturity, viability and suitability of different AI research and technologies and their applicability to resolve scientific problems.



AI RESEARCHER - THEORETICAL



COMPETENCIES

- Mathematical Skills - Developing AI models will require confidence in calculating algorithms and a strong understanding in probability.
- AI programming will utilize statistics, calculus, linear algebra, and numerical analysis to help predict how AI programs will run.



ESSENTIAL SKILLS

- AI/ML/Deep Learning Modelling,
- Understanding of major applications of AI/ML
- Image and Voice Recognition
- Technical hands-on experience in system integration
- Experience with projects in autonomous system.
- Project management



SOFTS SKILLS

- Problem-solving
- Critical and analytical thinking
- Creativity
- Strong communication
- Self-starting motivation
- Teamwork
- Pro-active data collaboration
- Agile and fast learner
- Collaborative skills
- Intellectual curiosity



COMMON CERTIFICATION

- Graduate, Postgraduate or Ph.D degree in Computer Science, Engineering
- Information Systems
- Computer Engineering
- Mathematics
- Statistics
- Related AI/ML
- Deep Learning certification.



COMMON TOOLS

- Scikit Learn
- TensorFlow
- Theano
- Caffe
- MxNet
- Keras
- PyTorch
- H2O: Open-Source AI Platform
- Google ML Kit
- CNTK
- Auto ML
- OpenNN



CAREER PATHWAYS

AI/ML researcher



Senior AI/ML researcher



JOB DESCRIPTION

- AI Research Scientists have tasks of designing, undertaking, analysing information and developing a new novel AI modeling (abstract) or ML/DL algorithm.
- These individuals are experts in multiple AI disciplines, including applied math, machine learning, deep learning, and computational statistics.
- Engage and collaborate with industry players, research institutes and institutes of higher learning to assess the maturity, viability and suitability of different AI research and technologies and their applicability to resolve scientific problems.





CAREER PATHWAYS

AI/ML researcher



Senior AI/ML researcher



JOB DESCRIPTION

- AI Research Scientists have tasks of designing, undertaking, analysing information, information and developing/enhance the current AI or ML/DL method by adopting existing algorithms/libraries.
- These individuals are experts in multiple AI disciplines, including applied math, machine learning, deep learning, and computational statistics.
- Work closely with the application team in providing the technical research support and development of various Artificial Intelligence (AI) algorithms
- Engage and collaborate with industry players, research institutes and institutes of higher learning to assess the maturity, viability and suitability of different AI research and technologies and their applicability to resolve industry problems
- QA and verified proposed algorithms; involved in technical research and development of various AI algorithms
- Assist the developers in translating the algorithms into potential applications
- Assist in User Acceptance Testing for successful system implementation.





COMPETENCIES

- Mathematical Skills - Developing AI models will require confidence in calculating algorithms and a strong understanding in probability.
- AI programming will utilise statistics, calculus, linear algebra, and numerical analysis to help predict how AI programs will run.



ESSENTIAL SKILLS

- AI/ML/Deep Learning Modelling
- Image and Voice Recognition
- Understanding of AI & machine learning
- Technical hands-on experience in system integration
- Experience with projects in autonomous system
- project management



SOFTS SKILLS

- Problem solving
- Critical and analytical thinking
- Creativity
- Strong communication
- Self-starting motivation
- Teamwork
- Pro-active data collaboration
- Agile and fast learner
- Collaborative skills
- Intellectual curiosity



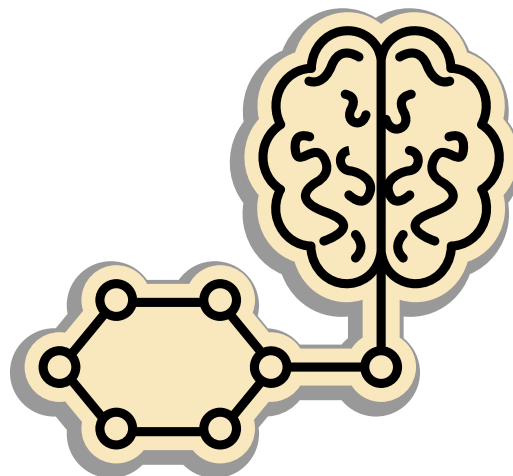
COMMON CERTIFICATION

- Graduate, Postgraduate or Ph.D degree in Computer Science
- Engineering
- Information Systems
- Computer Engineering
- Mathematics
- Statistics
- Related AI/ML
- Deep Learning certification



COMMON TOOLS

- Scikit Learn
- TensorFlow
- Theano
- Caffe
- MxNet
- Keras
- PyTorch
- CNTK
- Auto ML
- OpenNN
- H2O: Open-Source AI Platform
- Google ML Kit





CAREER PATHWAYS



JOB DESCRIPTION (CON'T)

- Develops, rolls out and implement policy processes to improve compliance, Identifies current and future legal, regulatory and policy requirements as well as industry best practices and ambiguous ethical issues (e.g. fairness, bias, transparency, and explainability in ML systems), translating them into policy, standards and controls Identify and assesses potential risks and impacts in AI projects
- Recommends appropriate mitigations, and prevents harm during the design and planning phase of AI systems
- Designs, builds and runs compliance programs including post market monitoring by collaborating with other teams.
- Develops tools and concepts for data impact reviews and assessments
- Assists stakeholders with inquiries and advice
- Coordinates efforts between Ethics team and stakeholders to run AI impact assessments
- Coaches stakeholders in multiple business teams to translate best practice approaches into operational context
- Develops and delivers educational resources and programs on responsible AI with Learning team to increase literacy
- Faces and solves customer challenges in AI and data ethics
- Supports client facing work such as client assessments and contracts
- Represents the Data Team to raise awareness of the work we do, including acting as a public advocate for responsible data use and ethical approaches to AI.
- Helps respond to regulatory inquiries and investigations related to AI
- Engage with internal and external stakeholders to strengthen business relations



JOB DESCRIPTION

- Partners with key business stakeholders during new services, offerings, projects, products and initiatives to ensure data and AI compliance issues are considered at the outset
- Assists contracting for Business, Legal, Client and Operations teams with templates, guidance and SME support— in evaluation of AI and Data issues for acquisition targets, pitches, development and implementation of post-merger integration strategy.
- Reviews, drafts, and agrees data licenses, sophisticated alliance, academic, and supplier technology transaction agreements related to client-facing products and services.
- Recruits, integrates and leads a global and diverse team of dedicated experts in the Ethics and Data team.
- Represents function on steering committees and board



COMPETENCIES

- Experience in a global compliance and ethics/governance function, preferably in a major law firm and/or multinational corporation focusing on global privacy and AI-related laws and regulations
- Knowledge of risk analysis, mitigation strategies, governance, statistics, and design of experiments
- Experience in research and ability to organize and summarize findings in oral and written communication.
- Strong command of data and AI governance, privacy principles, strategies and frameworks, translating them into clear recommendations
- Knowledge of and experience in monitoring legal and regulatory trends and developments, such as the proposed EU AI and digital packages, and translating those into actionable requirements
- Proven ability to translate regulatory, privacy, security and/or ethical requirements into implementation guidance at scale, including to provide guidance and advice on how to identify and manage data-related risks
- Experience in one or more the following fields: analytics, data science, machine learning, data governance, data protection and/or privacy
- Experience driving successful data-related change programs where teams have multiple, competing priorities
- Familiarity with relevant regulatory and certification frameworks such as: GDPR, CCPA, ISO 27001/SOC2, and Open Data/Opening Banking Regimes



SOFT SKILLS

- Analytical mindset
- Self-motivated and driven to learn in a field with rapid developments.
- Ability to work in a diverse and cross-functional team with attention to detail and facilitating discussions between technical and non-technical audiences
- Ability to build a network of professional relationships with experts and regulators
- Ability to prioritize and make decisions, and possess a high level of common sense, including the ability to forecast and spot risks
- Strong verbal, written and interpersonal skills with the ability to interface, and develop relationships, with all levels of management and staff, and work cross-culturally.
- Highly motivated and proactive, with the ability to articulate company vision and policy
- Committed to building and maintaining a consistent global program
- Good communication skills
- Strong project management and organizational skills would be considered a plus.



ESSENTIAL SKILLS

- The ethical issues that arise from AI are complex and multi-dimensional.
- As such, they require expertise and insights across a wide range of disciplines, from technology , business, law and regulatory compliance to philosophy, psychology, and sociology—and everything in between.
- Technical knowledge
- Regulatory knowledge
- Business Savvy and industry knowledge
- Regulatory and compliance knowledge
- Philosophy, psychology and sociology



COMMON TOOLS

- Responsible AI toolkit
- Microsoft Hax Toolkit
- Microsoft Toolkit by Pair
- GoogleAI Explainability 360,
- IBMAequitas Bias and Fairness toolkit
- University of Chicago Center for Data Science and Public Policy
- Bias Audit AI,
- Pymetrics |(About Pymetrics AI)
- Fairness toolkit, Fairlearn



COMMON CERTIFICATION

- Professional certification related to AI and ML
- Bachelor's Degree in Computer Science
- Engineering
- Information Systems
- Business Informatics
- Data science, or related field
- Law degree (based on geography) or M.Sc. or comparable degree in (business) informatics, data science, information management, or adjacent subjects
- Relevant certifications (such as in data privacy, data governance, audit, AI, Information Security) are considered a plus.



COMMON TOOLS

- Responsible AI toolkit
- Microsoft Hax Toolkit
- Microsoft Toolkit by Pair
- GoogleAI Explainability 360,
- IBM Aequitas Bias and Fairness toolkit
- University of Chicago Center for Data Science and Public Policy
- Bias Audit AI,
- Pymetrics [(About Pymetrics AI)]
- Fairness toolkit, Fairlearn





CAREER PATHWAYS

AI Product Manager



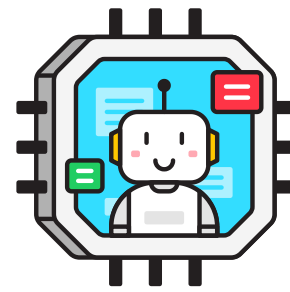
Senior AI Product Manager



JOB DESCRIPTION

- Translates business strategy into product strategy
- Owns the product roadmap
- Executes product strategy
- Drives action throughout the organisation to get products to market
- Plans and carries out product launches
- Manages product profitability and commercial success – own the business case
- Provides insight to stakeholders on the product and market
- Provides product marketing with insights on key differentiators and messages
- Writes high-level requirements
- Supports the product owner and product marketer with any questions they may have
- Manages all aspects of in-life products, including customer feedback, requirements, and issues





SOFT SKILLS

- Articulate product visions
- Improve communication between team members
- Storytelling skills to explain complex problems into simple and easy-to-understand stories
- Communicate the proposition to the sale



COMPETENCIES

- Basic knowledge of AI Project Management knowledge
- Business Model Software requirement specification
- Product Marketing knowledge
- Product Lifecycle Management
- Resource allocation and planning
- Understanding of AI & machine learning



COMMON TOOLS

- Project Management Software
- Mock Up and UI Design
- Digital Product Design Tools
- Business Intelligence Software
- Gantt Chart Project Costing Software
- Presentation Software



ESSENTIAL SKILLS

- Able to tell the difference between an algorithm and an AI
- Distinguishes different types of machine learning
- Executes business strategy for AI and Data
- Performs SWOT analysis
- Learns how to build and test a hypothesis
- Acquires user experience for AI and data science skills
- Sources data for your projects and understand how this data needs to be managed
- Examines the full lifecycle of an AI or data science project in a company
- Learns how to manage data science and AI teams
- Addresses ethics, privacy, and bias
- Learns what is the role of a product manager and what is the difference between a product and a project manager
- Distinguishes between data analysis and data science
- Have undertaken some professional AI training courses (from online coursera / edx or university courses)
- Agile Project management skills



COMMON CERTIFICATION

- Professional certification related to AI or ML
- Bachelor Degree in Engineering, Mathematics, Statistics, Science (STEM) Postgraduate Diploma or;
- Degree in Business related subjects OR relevant experience in business.



CAREER PATHWAYS



JOB DESCRIPTION

- Responsible for the MLOps pipelines creation and automation on cloud and on premise, CI/CD pipelines orchestration ML models deployment, testing and continuous maintenance
- Optimises the code and make sure that the ML application is scalable
- Data scientist code refactoring
- Communication with the Project team Taking offline models data scientists build and turn them into a real machine learning production system
- Identifies and evaluate new technologies to improve performance, maintainability and reliability of the machine learning systems
- Applies software engineering rigour and best practices to machine learning, including CI/CD automation
- Supports model development, with an emphasis on auditability, versioning, and data security
- Facilitates the development and deployment of proof-of-concept machine learning systems



ESSENTIAL SKILLS

- Experience with MLOps Frameworks like Kubeflow, MLFlow, DataRobot, Airflow etc
- Experience with Docker and Kubernetes Programming
- Languages like Python, Go, Ruby or Bash
- Understanding of Linux and fluency in Python
- Experience working with cloud computing and database systems
- Knowledge of frameworks such as scikit-learn, Keras, PyTorch, Tensorflow etc and ability to understand tools used by data scientists
- Software testing skills
- Cloud Skills

SOFT SKILLS

- Agile and fast learner
- Collaborative skills
- Intellectual curiosity
- Strong communication
- Self-starting motivation
- Teamwork
- Pro-active data collaboration
- Listening skills
- Reporting skills
- Collaboration skills
- Problem-solving
- Critical and analytical thinking
- Creative

COMPETENCIES

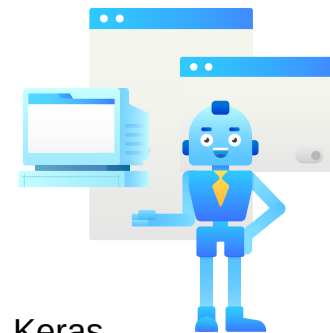
- Ability to design and implement cloud solutions (AWS, Azure, GCP)
- Ability to build MLOps pipelines on cloud solutions (AWS, Azure or GCP)
- CI/CD pipelines orchestration by GitLab CI, Github Actions, Circle CI, Airflow or similar tools
- Experience with software development and test automation
- Strong software engineering skills in complex multi-language systems
- Good communication skills and ability to work in a team environment

COMMON CERTIFICATION

- Professional certification related to AI or ML
- Bachelor Degree in Engineering/ Mathematics/Statistics
- Cloud certifications (eg. AWS Certified DevOps Engineer, Azure DevOps Engineer Expert)

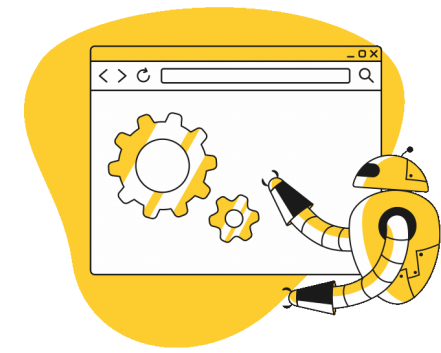
COMMON TOOLS

- MLOps tool like AWS Sagemaker
- Azure Machine Learning
- GCP Vertex.ai ML frameworks such as scikit-learn, Keras, PyTorch, Tensorflow, RapidMiner etc
- Project management software





CAREER PATHWAYS



Associate AI
Application Developer



AI Application
Developer



Senior AI
Developer



JOB DESCRIPTION

- Responsible for the MLOps pipelines creation and automation on cloud and on premise, CI/CD pipelines orchestration ML models deployment, testing and continuous maintenance
- Optimises the code and make sure that the ML application is scalable
- Data scientist code refactoring
- Communicate with the project team
- Take offline models data scientists build and turn them into a real machine learning production system
- Identifies and evaluate new technologies to improve performance, maintainability and reliability of the machine learning systems
- Applies software engineering rigour and best practices to machine learning, including CI/CD automation
- Supports model development, with an emphasis on auditability, versioning, and data security
- Facilitates the development and deployment of proof-of-concept machine learning systems



SOFT SKILLS

- Report writing skills to convey technical information and findings, provide the details about the processes and objectives, and describe the design choices and products
- Communication skills and the ability to translate technical concepts into simple language in an engaging and confident manner
- Listening skills to understand problems and issues clearly
- Leadership skills if in the management role and capacity



COMPETENCIES

- Designs and develop algorithms that can adapt and learn over time as they process large amounts of data
- Applies data science principles to engineering and use various programming languages to develop software solutions that meet project requirements
- Works with data scientists, product managers, customers and machine learning experts to develop applications that solve real world problems
- Converts AI/ML models into APIs that other developers can use
- Performs statistical analysis on big data sets
- Specifies infrastructure requirements and environment required to execute the AI Project



COMMON CERTIFICATION

- Bachelor or Postgraduate degrees in AI or Machine Learning or STEM (Science, Technology , Engineering and Mathematics)
- Machine learning and AI courses from reputable universities
- Professional Certificates of Python, R and Other Machine learning Courses



COMMON TOOLS

- Familiarity with one or more of the popular machine learning frameworks e.g. TensorFlow, PyTorch and JAX
- Interactive data science development environments like
 - a) Jupyter notebooks
 - b) Apache Zeppelin
 - c) Mode Notebooks



ESSENTIAL SKILLS

- Mastering one or more of the programming languages used in AI, for example Python, R and Java
- Able to perform all processes of data science including but not limited to the following:
 - a) Frame the problem
 - b) Collecting the raw data
 - c) Process the data for analysis
 - d) Explore the data
 - e) Perform in-depth analysis
 - f) Communicate the results of the analysis
- Able to perform app processes of machine learning, including but not limited to the following:
 - a) Data gathering
 - b) Data preparation
 - c) Model selection
 - d) Training Model evaluation
 - e) Hyperparameter
 - f) Tuning Prediction



- d) JetBrains Datalore
- e) Google Colab
- f) KaggleAWS Sagemaker
- g) Azure ML
- h) Google Vertex.ai

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