

Roger Stuckey

Associate Director, QDSA

<http://rogerstuckey.com/> [✉ roger.stuckey@gmail.com](mailto:roger.stuckey@gmail.com) [📞 61-421-212142](tel:61-421-212142)

[📄 rstuckey](#) [📱 rstuckey](#) [📧 roger-stuckey](#) [🌐 rogerstuckey](#)



Associate Director in charge of expanding the Defence science network in Queensland and building Defence relationships across the academic and industry sectors. Broad expertise in data analytics, autonomous systems, numerical modelling, simulation, optimisation, software architecture and distributed computing. Over 20 years of professional software development experience. Over 15 years in leadership, supervision, management, support and planning roles of many research and sustainment projects. Specialist skills in artificial intelligence, including machine learning, system identification, Bayesian networks and evolutionary algorithms.

SKILLS

Programming & Markup Languages

Python (15+) CSS/HTML (20+)
Matlab (15+) C/C++ (10+)
Perl (10+) Bash, Csh (10+)
Javascript (5+) Fortran (5+)
Java (3+) Delphi/Pascal (2+)
C# (1+) R (1+) Ruby (1+)
Scala (1+) PHP (1+)

Software, Frameworks & Libraries

Boost OpenCV BLAS
LAPACK Flask Django
Node.js Angular.js
Processing.js jQuery
Bootstrap Numpy Matplotlib
Pandas Pyro PyTorch
Twisted scikit-learn Spark
Hadoop TensorFlow Theano
Caffe Keras wxWidgets Qt
Git Subversion

Databases & File Storage Systems

MySQL PostgreSQL HDF
HDFS MongoDB Parquet
Redis InfluxDB Cassandra
RDS S3

Operating Systems & Platforms

Linux Irix AIX Solaris
SunOS Windows MSDOS
OS X Docker Kubernetes
AWS EC2 Lambda

WORK EXPERIENCE (9)

Associate Director at Queensland Defence Science Alliance

Jan 2022 - Current

<https://queenslanddefencesciencealliance.com.au/>

Expanding the Defence science network in Queensland and build Defence relationships across the academic and industry sectors to deliver S&T for Defence requirements.

- Establishing and promoting the QDSA as an innovative and distinctive hub for future Defence-related research.
- Representing the QDSA, ADSUN and DSTG at state, national and international levels, and promoting further connections through strategic business planning, communications and network management.

Maritime Data Analytics Lead Specialist at Joint and Operations Analysis Division, Defence Science and Technology Group

Jan 2018 - Current

<https://www.dst.defence.gov.au/capability/maritime-capability-analysis>

Leading the development and delivery of science and engineering support, as well as the design of data processing infrastructure and application of machine learning to the maritime domain.

- Designed and implemented Big Data processing architecture for storage and analysis of Defence system and environmental data. Deployed on computer clusters on several different networks. Included development and integration of analyst workstations with tools for interactive processing, visualisation and interfacing with the clusters.
- Conducting research into classification and tactical manoeuvre recognition of ship tracks using time-series machine learning techniques.
- Delivering computational support to analysis activities in the Branch and Division, including the provision of advice and assistance in developing and configuring algorithms for effective integration in the system. Supervising staff in application of distributed processing and machine learning algorithms for data integrity assessment, system characterisation, event detection and cluster analysis.
- Leading the integration of a Big Data processing and storage capability into the organisation's High Performance Computer (HPC), under a major acquisition project.
- Liaison with IM&T, engagement with data analysts in other Divisions and development of links with external researchers and engineers.
- Providing mentorship in data science and software development to analysts and contributing to quality assurance efforts.

Staff Officer Science at Weapons and Combat Systems Division, Surveillance and Response Group (SRG)

Jan 2016 - Jan 2017

<https://www.airforce.gov.au/about-us/structure/air-command-headquarters/surveillance-and-response-group>

Managed science and technology requirements for the Air Force.

- Coordinated the program of work undertaken by various teams in DST Group for the Surveillance and Response Group. The work encompassed

a vast array of technologies including radar, tracking, electronic warfare, mission systems, data links and distributed mission training.

- Managed all S&T Client Requirements for SRG and building professional relationships through regular meetings, presentations and reviews with stakeholders as well as academia and industry partners.
- Technical evaluation of tools for data mining, tracking, fusion and simulation.

Senior Software Engineer / Research Scientist at Maritime Division, Defence Science and Technology Group

Jan 2008 - Jan 2016

<https://www.dst.defence.gov.au/capability/littoral-autonomy-sensors-systems>

Led several projects in maritime autonomy.

- Conceived & managed numerous research projects, including: Acoustic communications networks for Autonomous Underwater Vehicles (AUV's); Analysis of unmanned maritime operations using Discrete-Event Simulation (DES); Agent-based multiple vehicle cooperative mission control.
- Led dynamic software development environment involving management and coordination of teams, individual staff and students. Our agile test-driven development approach heavily exploits simulation with both software- and hardware-in-the-loop.
- Formulated work area priorities and designed software architectures. Managed IT systems, including development of strategies and implementation of processes for content management, software version control and data storage/retrieval.
- Liaised with customers and key stakeholders. Coordinated with external organisations on joint development, experiments and trials.

Senior Lecturer (Conjoint) at School of Engineering, University of Newcastle

Jan 2013 - Jan 2014

<https://www.newcastle.edu.au/research/centre/cdsc>

Conducted research and development on experiment design and model selection.

- Developed software tools for mission planning and control of multiple unmanned systems, including payload interfaces. Designed mission planning & monitoring tool for real-time tracking.
- Conducted collaborative research into experiment design and Bayesian model selection of dynamic systems to optimally extract and determine the critical components.

Research Fellow at Center for Autonomous Vehicle Research, Naval Postgraduate School

Jan 2008 - Jan 2009

<https://nps.edu/web/cavr>

Conducted research on terrain-relative navigation for AUV's.

- Developed a novel approach to real-time Terrain-Relative Navigation (TRN) based on Simultaneous Localisation and Mapping (SLAM). Prototyped and demonstrated in simulation and subsequently implemented on a real vehicle equipped with bathymetric sonar. Software modules included those for vehicle dynamics, adaptive navigation & control, grid management and low-level drivers for the sensors & actuators.
- Rapidly built network of colleagues and structured research program to leverage the local expertise and resources. Presented research at a number of meetings and conferences across the US and in Europe.

Research Scientist / Software Engineer at Joint and Operations Analysis Division, Defence Science and Technology Organisation

Jan 2004 - Jan 2007

<https://www.dst.defence.gov.au/capability/maritime-capability-analysis>

Contributed to maritime capability & concepts operations analysis.

- Led software team to develop a framework for the simulation and analysis of area defence systems and scenarios using Monte Carlo experimentation. Multi-core, local cluster and Cloud extensions developed for distributed management and processing. Also developed extensive test harness for automated testing across a suite of predefined assets and scenarios.
- Managed software development contract, entailing the generation of requirements specifications, project and test documentation, as well as monitoring, reporting and guiding development according to stakeholders needs.
- Worked on an R&D Infrastructure task for large scale, distributed, semi-autonomous simulation of the military battle-space.
- Provided short courses in Matlab, Python and C/C++ programming. Lectured in various engineering and software development topics to staff and students.

Research Scientist at Air Operations Division, Defence Science and Technology Organisation

Jan 1996 - Jan 2004

<https://www.dst.defence.gov.au/capability/aerospace-systems-effectiveness>

Contributed to simulation model development for flight vehicles and systems.

- Developed both high- and low-fidelity simulation models for the Armed Reconnaissance Helicopter (ARH) for use in human-in-the-loop simulation environments and operational analysis.
- Architected and led development of generalised coupled-body simulation model for flight-envelope determination of helicopter slung-load systems. Also built tools for reconstruction, 3d visualisation and analysis.
- Planned and coordinated tasks, including deliverables, finance, staff, demonstration and training for clients, as well as subsequent advice and support.
- Investigated the use of Genetic Programming for identification of flight dynamic models. Ran software on a high-performance SGI machine. Further modifications were made to improve the performance and convergence during optimisation.
- Created internal web-based information portal and discussion forum for Matlab users.

Research Assistant at Department of Aeronautical Engineering, University of Sydney

Jan 1995 - Jan 1996

<https://www.sydney.edu.au/engineering/our-research/infrastructure-and-transport/aerospace-engineering.html>

Developed acquisition and telemetry software for an Unmanned Aerial Vehicle (UAV).

- Developed a software interface for a GPS receiver unit, as well as a tracking tool for real-time visualisation of the UAV in flight.

EDUCATION (6)

Further Education at Various Online Course Providers

2009 - 2021

Microsoft Azure Fundamentals Google Cloud Platform Fundamentals Deep Learning with PyTorch Reinforcement Learning
Natural Language Processing Python for Finance Building SAAS Applications Creating a Startup Business

Graduate Program in Scientific Leadership at University of Melbourne

2007 - 2008

Scientific Leadership Managing Knowledge Managing Projects Organisational Culture Strategy, Capability and Effectiveness Ethics Frameworks
Strategic Management Financial Planning Communication Managing Risk Government Processes

Masters of Computer Science, Information Technology* at RMIT University

2003 - 2004

Interactive 3D Graphics and Animation Foundations of Distributed Programming Advanced Programming Techniques Object Oriented Programming
System Engineering for Complex Problem Solving * partially complete

Specialised Training Courses at University of South Australia

1996 - 2008

Java Programming C/C++ Programming Engineering Applications of Random Signal Analysis Residential Management
Performance Appraisal Workshop Time Management

PhD in Engineering at University of Sydney

1991 - 1995

Identification of Nonlinear Model Parameters (Thesis) Mathematical Modelling and System Identification Neural Networks Control Theory
Aeroelasticity Fuzzy Logic Kalman Filtering Random Signal Analysis

Bachelor of Engineering (Aeronautical) Honours Class I at University of Sydney

1987 - 1990

Experimental Establishment of the Oscillatory Derivatives (Thesis) Flight Dynamics and Digital Control Mechanics of Flight Propulsion
Advanced Rotary Wing Dynamics Advanced Aerodynamics Aircraft Structures Aircraft Design Propulsion Aviation Operation and Management
Thermodynamics Materials Industrial Electronics Flying Operations Mathematics Numerical Methods Engineering Mechanics
Mechanical Design Engineering Programming

AWARDS

Defence Science and Technology Client Award at Royal Australian Navy, Department of Defence

2018

Defence Science Fellowship at Defence Science and Technology Organisation

2008

Winner, Matlab Programming Contest at The Mathworks

2003

Graduates Research Prize in Aeronautics at Department of Aeronautical Engineering

2003

Australian Postgraduate Research Award at Commonwealth Government

1991

PUBLICATIONS

[A Comparative Study of RAN Navigational Data and Hindcast Atmospheric Modelling, Parts I and II](#) in DSTG Technical Reports DST-Group-TR-2000

1 Jan 2020

[The Requirement for a Data-Intensive Computing Capability](#) in DSTG Discussion Paper DST-Group-DP-1382

1 Jan 2017

[Experiment Design, Bayesian Estimation and Model Selection of an Autonomous Underwater Vehicle](#) in DRAFT

1 Jan 2014

[Navigational Error Reduction of Autonomous Underwater Vehicles with Selective Bathymetric SLAM](#) in IFAC Workshop on Navigation, Guidance and Control of Underwater Vehicles

1 Jan 2012

[PyDES: A Framework for Complex Scheduling Analysis using Discrete-Event Simulation](#) in SimTecT Simulation Technology and Training Conference

1 Jan 2012

[Dynamic Simulation of a Helicopter Carrying a Slung Load](#) in International Congress on Modelling and Simulation

1 Jan 2007

[Helicopter Slung-Load Simulation Toolbox for use with MATLAB](#) in DSTO Technical Note DSTO-TN-2346

1 Jan 2003

[Virtual Reality Modelling Language for Visualisation of Flight Simulations](#) in SimTecT Simulation Technology and Training Conference

1 Jan 2002

[Mathematical Modelling of Helicopter Slung-Load Systems](#) in DSTO Technical Report DSTO-TR-1257

1 Jan 2001

[Dynamic Simulation of the CH-47D Helicopter and Externally Slung Boat](#) in Australian Pacific Vertiflite conference on Helicopter Technology

1 Jan 2000

[Dynamic Simulation of the CH-47D Helicopter with Single and Multiple Slung Loads](#) in Australian Pacific Vertiflite conference on Helicopter Technology

1 Jan 1998

[A Genetic Approach to Modelling Flight Dynamic Characteristics](#) in AIAA Aerospace Sciences Meeting

1 Jan 1997

[Modelling for Aeronautical Applications](#) in International Aerospace Congress

1 Jan 1997

[A Comparison of Spoiler Aerodynamic Characteristics as Estimated from Flight](#) in International Aerospace Congress

1 Jan 1997

[Identification of Nonlinear Model Parameters - Spoiler Aerodynamics of the F-111C Aircraft](#) in University of Sydney, Department of Aeronautical Engineering

1 Jan 1995

[Flight-Estimated Spoiler Aerodynamics of the F-111C Aircraft](#) in AIAA Atmospheric Flight Mechanics Conference

1 Jan 1994

[Efficient Data Partitioning in the Nonlinear Model Structure Determination of Aircraft](#) in Australian Aeronautical Conference

1 Jan 1993

[Identification of Nonlinear Aircraft Spoiler Parameters](#) in IFAC Congress

1 Jan 1993

REFERENCES

“ Roger's expertise and efforts have been critical to S&T capability investment decisions in the branch. Roger has led interactions with the HPC pathfinder project, where his knowledge and expertise are reducing the time to generate and apply analytics capability on the HPC, and being applied to generate new machine learning capability. Roger has been vital to discussions on the shape of the work program, quality review of team outputs, and creation of data workflows. ”

Tristan Cooper, 2021

“ Roger's work has continued to be of a very high standard and has substantially advanced our capabilities. Roger's efforts in developing the requirements for a data-intensive computing capability was crucial to the High Performance Computing (HPC) Project, recognizing the need to specifically address the Big Data problem area. Roger has provided direct support, assistance, and advice to all members of the team as they have undertaken analysis. I have been impressed with the systems that Roger has put in place and the attention he pays to making sure that the processes work well and are well documented. I believe that his leadership here, combined with meeting his other Key Expected Results warrant a rating of Superior. ”

Timothy Surendonk, 2018

“ In addition to the agreed milestones set before taking on his present role, Roger has actually taken on significant extra engagement work on his own initiative and shows his understanding and alignment with corporate goals and strategy. These extensions of his nominal role show Roger's ability to work at a very high level. Roger provided a number of significant outcomes for Defence stakeholders. ”

Timothy Priest, 2017

“ I assess Roger's performance as Superior. Roger has hit the ground running in his new role. Normally a significant amount of time (many months) would be expected to acclimatise to a new position. However, Roger has managed to become fully effective in his role very quickly. ”

Paul Heuer, 2016

“ Roger developed, tested and delivered working communications software solutions under a tight timeframe to support a multinational trial. He has also developed simulation capability for this software that may be extended to other projects. Roger has demonstrated motivation, competence and collegiality. ”

Helen Dorsett, 2015

“ Roger has had a successful year with significant, visible contributions that have raised the profile of the group. ”

Stuart Anstee, 2012

“ Roger has a high-profile role within the group and I am particularly happy with his commitment to our IT and software infrastructure. ”

David Battle, 2012

“ Roger continued to provide strong technical and professional leadership in the development of models for both areas. Roger has also made significant progress in leading and conducting a study of requirements for modelling tools. ”

Matthew Spillane, 2010

