Position Details

Research Scientist/Engineer

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| The following information is for applicants | |
| Advertised Job Title | Research Scientist (Computational Finance) |
| Job Reference | 64374 |
| Tenure | Indefinite  Full-time |
| Salary Range | CSOF5 - AU$98,735 to AU$106,848 pa  CSOF6 - AU$113,338 to AU$119,827 pa  (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Docklands or Clayton, Melbourne |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Team Leader – Decision Making Under Uncertainty |
| Client Focus – Internal | 20% |
| Client Focus – External | 80% |
| Number of Direct Reports | 0 |
| Enquire about this job | Geoff Lee, Geoffrey.Lee@data61.csiro.au |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

**Role Overview**

CSIRO Data61 has an exciting career opportunity for a quantitative Research Scientist with a track record in numerical methods and computational finance. As part of the Optimisation and Financial Risk Analytics group in Data61, the Research Scientist will join the Australian node of RiskLab, a collaborative centre with industry and university partners working together with Data61 researchers and engineers. This group explores decision-making and optimization under uncertainty, developing state-of-the-art exotic options models for industrial partners in domains including finance, energy and primary industry. They deliver benefits to business and industry by directly working with industry practitioners in designing and implementing innovative solutions and are industry-led in our choice of research topics. Their solutions are delivered through software platforms that are used by industry practitioners in real-time production environments and as well as through publication of our research results.

The successful applicant in this role will:

* be a member of a highly successful team of applied mathematicians and financial engineers working to address challenging problems in exotic options valuation and financial risk modelling, both locally and globally
* work on new mathematical approaches and numerical methodologies to deliver innovative solutions for valuing exotic financial options, in addition to optimal dynamic decisions under uncertainty
* contribute to successful delivery of high-quality implementations of quantitative models to international clients.

In return the successful applicant will be rewarded by working with a leading government organisation which is engaged in world class scientific research, with excellent career development and professional support. They will benefit from working with other innovative researchers on projects contributing directly to industry. This position will be based at our Docklands or Clayton offices in Melbourne, working within the Analytics and Decision Sciences Research Program.

CSIRO is strongly committed to Diversity and offers [Flexible Working Arrangements](http://www.csiro.au/proprietaryDocuments/FlexibleWorking.doc) and enhanced leave entitlements.      
**Duties and Key Result Areas:**

* Conduct R&D and consulting work in financial engineering as a member of a team, including implementation of numerical methods in C++ and python as part of a commercial-quality code-base.
* Identify and conduct independent research on new mathematical concepts, numerical methods and technologies in exotic options pricing, quantitative risk, dynamic portfolio allocations and/or other decision-making under uncertainty disciplines
* Publish research findings in conferences and key international journals, and present research findings to peers.
* Work closely with industry partners and other external collaborators in developing and transferring research results and applications.
* Work closely and collegially with other team members.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

**For appointment at the higher salary level (CSOF6), duties will also include:**

* Develop strategic research plans and ensure the successful execution of these plans.
* The candidate will develop an emerging profile through disseminating research results and establish influence with key industry partners.
* Leverage results to generate further research projects.

**Required Competencies:**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

***At CSOF 6 level:***

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Identifies critical stakeholders and influences them via an influential third party, for example through an established network, to gain support for sometimes contentious proposals/ideas.
* **Resource Management/Leadership:** Sets up and maintains effective and efficient work teams and manages performance and resources, to achieve objectives. Chooses appropriate management strategies and communication styles to maintain high levels of motivation and productivity. Gives feedback for development purposes and provides support and direction for improvement.
* **Judgement and Problem Solving:** Anticipates and manages problems in ambiguous situations. Develops and selects an appropriate course of action and provides for contingencies. Evaluates, interprets and integrates complex bodies of information and draws logical conclusions, synthesises proposals and defends options with reasoned arguments.
* **Independence:** Assesses the risk and opportunity of identified strategies, options and actions. Overcomes problems and setbacks in achieving goals. Invariably includes consideration of value-added future impact on bottom line when determining the optimal and efficient use of resources.
* **Adaptability:**Demonstrates flexibility in thinking and adapts to, and manages, the increasing rate of organisational change by adjusting strategies, goal and priorities.

**Selection Criteria**

**Essential:**

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A PhD in a major quantitative discipline and demonstrated ability to apply high level mathematical expertise to solving complex problems in areas such as financial engineering, computational finance, applied mathematics and/or related areas.
2. Qualification and/or experience in the design and implementation of numerical methods for solving PDEs encountered in financial exotic option valuation.
3. Evidence of knowledge of and experience using C++ or other similar statically-typed languages; use of linear algebra libraries such as Intel MKL, LAPACK, Eigen is highly desirable
4. Demonstrated extensive experience in implementation of numerical methods in C++ or similar languages as part of a multi-disciplinary team.
5. Demonstrated ability to produce research output through academic publications, with a publication record commensurate with experience.
6. Excellent written and oral communication in English, in informal team-based and formal academic and client-facing settings.

**Additional essential criteria for CSOF6 appointment:**

1. Experience in project leadership, including students and interns
2. Demonstrated experience in managing delivery of successful projects
3. Demonstrated ability to turn new ideas into research projects

**Desirable:**

1. Research and/or work experience in financial exotic option pricing by Monte Carlo methods, solving stochastic optimal control problems and/or time series analysis
2. Experience working in industry or collaborating to deliver projects with industrial partners. Finance-related industry interaction such as banking, superannuation, or insurance is particularly desirable.
3. Experience contributing to a multi-disciplinary software development project with enterprise-level engineering practices such as continuous integration and regression testing.

**Special Requirements**

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- https://ielts.com.au/

**About CSIRO:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!