JONATHAN CARROLL, PHD

I provide software design and implementation for statistics, analysis, visualisation, exploration, curation, and storage - all things data.

I enjoy solving complex puzzles, both mathematical, algorithmic, and biological.

I am comfortable with a UNIX/Linux environment. I have successfully navigated remote positions since 2017.

🎓 EDUCATION

2009 | 2006

PhD
Theoretical Physics

University of Adelaide   📍 Adelaide, South Australia

· Thesis: Applications of the Octet Baryon Quark-Meson Coupling Model to Hybrid Stars https://doi.org/10.48550/arXiv.1001.4318

2005 | 2002

Bachelor of Science, Honours
Physics & Theoretical Physics

University of Adelaide   📍 Adelaide, South Australia

🖥 RESEARCH EXPERIENCE

2013 | 2009

Postdoc

Special Research Centre for the Subatomic Structure of Matter
📍 University of Adelaide

· Dense matter nuclear astrophysics, hybrid stars
· Muonic hydrogen spectroscopy, "the proton radius puzzle"

💼 INDUSTRY EXPERIENCE

Current | 2022

Senior Research Software Engineer

Human Immunology Biosciences (HI-Bio)
📍 South San Francisco (remote)

· Development of internal tooling supporting translational science, antibody discovery, and infrastructure.
· R (shiny), Python, Docker, AWS, Benchling, clinical trials

Current | 2016

Editor

RWeekly   📍 rweekly.org

· Compliation, curation, and editing of the rweekly.org newsletter

Current | 2015

Principal Consultant

Irregularly Scheduled Programming   📍 Adelaide, South Australia
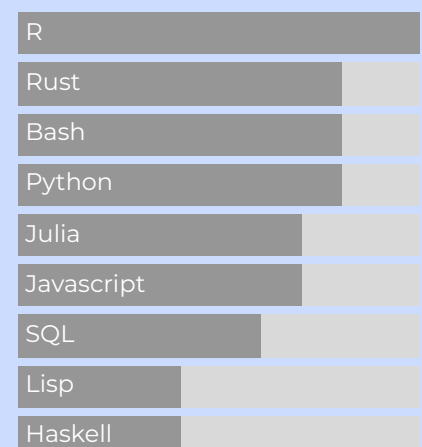
· Independent contractor / consultant (ABN: 43486039320)

CONTACT

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🕐 GMT+9:30
🔗 jcarroll.com.au
in carrolljonathan
🐙 jonocarroll
🐘 fosstodon.org/@jonocarroll
🐦 carroll_jono
jonathan-carroll
🆔 0000-0002-1404-5264

I have experience working in academia, government, and in both large and small biotech.

LANGUAGE SKILLS

R
Rust
Bash
Python
Julia
Javascript
SQL
Lisp
Haskell

Technical Lead / co-Product Owner

2022
|
2021

Cancer Immunology Department @ Genentech / Roche

📍 South San Francisco, CA, USA (remote)

· Coordinated development of a large shiny app project for interactive exploration of genomics visualisation, aimed at life-scientists without coding experience. Remotely directed a team of 10 developers located worldwide.
· R (shiny), CSS, JavaScript, HTML, SQL/SQLite, Docker, Git, database management, statistics, computational biology/genomics, management, agile scrum, leadership

Data Curator / Integrator & Software Developer

2022
|
2017

Cancer Immunology Department @ Genentech / Roche

📍 South San Francisco, CA, USA (remote)

· Developed software tooling supporting extraction and integration of multiple high-dimensional data modalities for FAIRification of internal data (MultiAssayExperiment / DataMart).
· R (Bioconductor, shiny), CSS, JavaScript, HTML, Docker, Git

Senior Research Officer / Fisheries Modeller

2017
|
2013

South Australian Research and Development Institute (SARDI)

📍 Government of South Australia

· Developed and maintained fisheries stock assessment models, spatio-temporal catch rate analyses, and geographic information system tools
· Database management, statistics, biology, and the interface between fishers and government policy
· R, C++ (ADMB), SQL, Microsoft Access

⌨ SELECTED WRITINGS

2023	Hyperlink Annotations in JavaScript and CSS
2022	Australian Signals Directorate 50c Coin Decryption
2022	Lissajous Curve Matrix in Julia
2021	Adventures in x86 ASM with rx86
2020	isEven without modulo
2019	r-bugs :: object_size
2018	Adding strings in R

I regularly write on my blog https://jcarroll.com.au about puzzles, syntax, and my own learnings as I explore multiple languages - R, Julia, Rust, Python, JavaScript, Lisp, Haskell, and many more.

❯_ SELECTED SOFTWARE PACKAGES

{ggeasy} (author, maintainer) CRAN

· Provides a series of aliases to commonly used but difficult to remember 'ggplot2' sequences

{bomrang} (contributor) CRAN

· Australian Government Bureau of Meteorology ('BOM') Data Client

I contribute R packages to open-source software and engage with users, integrating feature requests and bug fixes.

{datapasta} (contributor) CRAN

· RStudio addins and R functions that make copy-pasting vectors and tables to text painless

{mathpix} (author, maintainer) CRAN

· Support for the 'Mathpix' API (Image to 'LaTeX')

{benchlingapi} (author, maintainer) GitHub

· Wraps the Benchling API for access in R

SELECTED PUBLICATIONS

2022
Natural killer cell educating KIR/HLA combinations impact survival in anti-PD-L1 treated cancer patients

medRxiv

2021
Genetic variation associated with thyroid autoimmunity shapes the systemic immune response to PD-1 checkpoint blockade

Nature Communications, volume 12, number 3355

2020
Polygenic risk for skin autoimmunity impacts immune checkpoint blockade in bladder cancer

Proceedings of the National Academy of Sciences, volume 117, number 22, 12288–12294

2018
Beyond Spreadsheets with R

https://www.manning.com/books/beyond-spreadsheets-with-r

· Manning Publications
· 352 pages

2016
Influence of Wind and Swelloncatch Rates in a Dive Fishery: A Case Study from the South Australian Abalone Fishery

Journal of Shellfish Research, volume 35, number 3, 685-694

2016
Setting quotas using provisional data: a case study from the South Australian abalone fisheries

New Zealand Journal of Marine and Freshwater Research, volume 50, number 3, 371-388

2016
Spawning biomass of jack mackerel (Trachurus declivis) off eastern Australia: Critical knowledge for managing a controversial fishery

Fisheries Research, volume 179, 10-22

2014
Quark-meson coupling model, nuclear matter constraints, and neutron star properties

Physical Review C - Nuclear Physics, volume 89, number 6

2012
Nuclear quasielastic electron scattering limits nucleon off-mass shell properties

Physical Review C - Nuclear Physics, volume 86, number 6

I have experience as a first author and as a collaboator on articles in a diverse range of fields.

2011 Nonperturbative relativistic calculation of the muonic hydrogen spectrum

Physical Review A - Atomic, Molecular, and Optical Physics, volume 84, number 1

2011 Toward a resolution of the proton size puzzle

Physical Review A - Atomic, Molecular, and Optical Physics, volume 84, number 2

2009 Phase transition from quark-meson coupling hyperonic matter to deconfined quark matter

Physical Review C - Nuclear Physics, volume 79, number 4

2005 Neutral pion decay into $\nu\bar{\nu}$ in dense Skyrmion matter

Physical Review D - Particles, Fields, Gravitation and Cosmology, volume 71, number 11