New Zealand
Research Software Engineering Conference 2024
17 - 18 September 2024

Keynote Presentation (Chair: Mr Michael Karich), September 17, 2024, 9:50 AM - 11:00 AM

Beyond Bias: Moving Towards AI Safety

Dr. Andrew Chen[1]
[1] Chief Advisor: Technology Assurance

ABSTRACT

We often hear that AI systems are biased, but what does that actually mean? While it is clear that discriminatory or unfair AI systems can erode public trust and hinder adoption, the nuances of bias are not easily understood. In this talk, Andrew will discuss the rhetoric around bias and challenge the oversimplified notion of bias as a purely negative phenomenon. He will delve into the root causes of AI bias, examining how these may be introduced into AI systems and how we can conceptualise these in human terms. By changing the language that we use to talk about bias, we can move beyond objectives to mathematically eliminate bias, but to build towards fairness and safety instead. We can evaluate whether the objective functions of generalist AI systems are appropriate for the specific use cases we envisage. This talk aims to foster a critical conversation about AI bias, moving beyond simplistic narratives and towards a more comprehensive approach towards addressing this complex issue.

ABOUT THE AUTHOR(S)

Dr. Andrew Chen is currently Chief Advisor: Technology Assurance with New Zealand Police. In this role, he helps evaluate the legal, privacy, security, and ethical risks associated with Police use of new technologies. He has worked on technology ethics issues, particularly in a public sector context, over the last six years including work on digital contact tracing through the COVID-19 pandemic, police use of facial recognition, and understanding the implementation of the Algorithm Charter. His earned his PhD in Computer Systems Engineering from The University of Auckland, working on AI and computer vision methods for person tracking applications.

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Session 1 (Chair: Dr Olivia Angelin-Bonnet), September 17, 2024, 11:30 AM - 12:20 PM

Shaping Research Software: Research Software Engineering Stories

Dr Paula Andrea Martinez[1]
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ABSTRACT

The Australian Research Data Commons (ARDC)'s "Shaping Research Software" series is instrumental to achieving the goals of "The Research Software Agenda for Australia" program by fostering a dedicated community of researchers.

The series enhances visibility and recognition by profiling researchers-who-code and research software engineers (RSE), showcasing their contributions, and promoting the value of research software as a significant research output. This visibility aids in advocating for recognition and reward within academic and professional settings. By highlighting interviewees' lessons learned and reflections on building better software with quality and reusability in mind, the series provides valuable guidance and promotes best practices. Additionally, it supports advocacy efforts for policy changes by showcasing successful projects, contributing to a culture that acknowledges and rewards software outputs, thus aiding researchers' career progression. The series also builds community by inviting researchers to connect with the Research Software Engineers in Australia and New Zealand (RSEAUNZ) association, facilitating the exchange of ideas and methodologies, and encouraging collaboration and the sharing of best practices.

ABOUT THE AUTHOR(S)

Paula Andrea Martinez is the Software Project Coordinator at The Australian Research Data Commons. Her work supports recognition of research software as a first-class scholarly output of research in Australia. She is also an advocate of Open Science, better research, diversity and community projects. She has been involved in the definition of the FAIR4RS and has worked for the Research Software Alliance (ReSA).

Session 1 (Chair: Dr Olivia Angelin-Bonnet), September 17, 2024, 11:30 AM - 12:20 PM

Shaping Research Software: Research Software Engineering Stories

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ABSTRACT

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From risk models to dashboards – case studies in empowering research

Petra Muellner[1,2], Uli Muellner[2]
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ABSTRACT

Whilst there are growing pressures on researchers to create applied outputs that are easy to engage with, this is in practice not easily achieved and commonly requires considerable effort including scaling up of analytical code into highly performing software tools. Importantly, it is not just the finished dashboards and data science tools alone, but also the technical and creative process behind them that can deepen and strengthen collaboration and stakeholder engagement.

This talk will present a series of case studies and lessons learned. This will include translating complex climate models into a dashboard that allows user to assess complex biosecurity risks in the context of climate change as well as an application that allows users to explore the complexity of different infectious disease models and the effect of interventions on public health outcomes to bridge the gap between science and health policy. Furthermore, we will share how qualitative research on democratic performance can be effectively visualised to make research outputs accessible to a wide audience, including the media. We will also demonstrate how these tools not only make research outputs more user friendly, but also help educate stakeholders to ensure the technical difficulty does not get lost in translation.

ABOUT THE AUTHOR(S)

Petra Muellner is Director (Science & Data) at Epi-interactive and holds an adjunct academic role at Massey University. As epidemiologist she works at the interface of multiple disciplines. In her work at Epi-interactive she connects with researchers from across the globe to help them scale up their work and connect it with an audience through innovative digital solutions.

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Plugging memory leaks in a scientific code

Alex Pletzer [(1)], Yinjing Lin [(2)], Christian Zammit [(2)] and Chris Scott [(1)]
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ABSTRACT

TopNet is a hydrologic model designed for simulating catchment water balance and river flow. Developed at NIWA and written in Fortran, the code runs on a daily basis as part of EcoConnect to help communities in New Zealand prepare for droughts and floods. TopNet predicts river flow using a water balance model involving soil moisture, lake levels and discharge in rivers and streams while taking into account precipitation, snow and plant transpiration.TopNet combines TOPMODEL concepts (Beven and Kirkby, 1979; Beven et al., 1995), of sub-surface storage controlling the dynamics of saturated contributing area and baseflow recession, with a kinematic wave channel routing algorithm (Goring, 1994). Effective precipitation (snowfall and rainfall, after evapotranspiration) is transferred into river flow, through a series of watershed storage units: canopy storage; surface storage; soil zone; groundwater system; river system and reservoirs and lakes.

For large catchment area simulations, scientists had reported that TopNet's memory requirements sometimes grew from a few gigabytes to 100s of GB. Moreover, it was generally difficult to estimate the memory footprint ahead of job submission. As a result, long running jobs would often terminate prematurely when their memory allocation was exceeded.

To address this problem, NIWA called on NeSI's assistance via its consultancy service to determine: (1) if TopNet's memory footprint could be reduced and (2) whether researchers could estimate the memory requirements ahead of time. Large memory requirements can be costly with jobs staying in the queue for a potentially long time until enough resources are available.

Here we report on our journey in identifying the sources of heap allocations and how to reduce these. Using the ARM MAP profiler we discovered that the memory consumption increased linearly during the simulation, with noticeable, monthly jumps of 100-300MB. This had the hallmark of a memory leak. Using Valgrind, we were then able to locate the leaks. At the end of the project, the memory footprint was reduced to < 5GB and remained constant during the simulation, a 50-100x memory requirement reduction for long simulations. With this fix, TopNet can now be applied to estimating the risk of floods and droughts over century long climate change scenarios, a task that was previously nearly impossible.

Lessons learned during the project are: (1) there is great value in periodically checking for memory leaks, particularly in house written code; and (2) many software projects would benefit from external code reviews and make this part of the code development process. Additional pairs of qualified, independent eyes can improve code quality and reduce long term maintenance burden by providing a "fresh look."

ABOUT THE AUTHOR(S)

Alex Pletzer is a Research Software Engineer for NeSI based at NIWA who is helping researchers across New Zealand run better and faster on high performance platforms

Yinjing Lin is a Research Software Engineer at NIWA.

Christian Zammit is a hydrologist at NIWA. His research interests include uncertainty quantification in water resources and weather related hazards.

Chris Scott is a Research Software Engineer at NeSI and Leader of the NeSI Consultancy Team

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Session 2 (Chair: Ms Janet Stacey), September 17, 2024, 1:30 PM - 2:30 PM

Demo: Cylc 8 workflow orchestration - oh the magical things you can do!

Hilary Oliver
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ABSTRACT

Cylc is a general purpose workflow engine with a particular gift for cycling. It originated at NIWA in New Zealand and is now an Open Source project used around the world. Despite its origins Cylc is not in any way specialized to weather and climate workflows, although it can run infinite date-time cycling graphs if you happen to need that, and is especially powerful for cases where later repetitions of tasks depend on the outputs of earlier instances. At NZRSE 2022 Hilary Oliver demonstrated how to run simple workflows with Cylc on NeSI HPC platforms. This year he will briefly touch on ease of use for simple cases, then move on to demonstrate some of the magical things you can do with Cylc 8 and its powerful new UIs - for instance, you can easily re-run past sub-graphs to fix runtime problems while your main flow continues uninterrupted.

ABOUT THE AUTHOR(S)

Hilary Oliver is Principal Scientist, Research Software Engineering, at NIWA, and a form NZRSE Keynote Speaker (2020). He leads the development of Cylc, initially at NIWA and now as Open Source project - primarily as a key component of the UK Met Office led Momentum Partnership's Next Generation Modeling System.

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Session 2 (Chair: Ms Janet Stacey), September 17, 2024, 1:30 PM - 2:30 PM

Advancing Materials Informatics: Data Science and New Techniques in Unveiling Material Properties

Bushra Anam
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Materials informatics is revolutionising materials science by integrating data science to uncover and analyse material properties with unprecedented precision. This presentation provides a state-of-the-art overview of how data science enhances materials research through advanced computational techniques. By leveraging machine learning and deep learning frameworks, researchers can process and interpret large datasets, discover new material properties, and optimise material performance. Techniques such as regression analysis, clustering, convolutional neural networks, and transfer learning are discussed for their role in identifying complex patterns and improving predictive accuracy. The presentation will specifically highlight the use of microstructural images in understanding material properties, showcasing how deep learning algorithms can enhance image analysis and interpretation. Despite these advancements, challenges remain, including issues with data quality, model generalisability, and the integration of domain-specific knowledge. This session aims to inspire researchers to embrace these cutting-edge tools while addressing the ongoing challenges to push the boundaries of materials science.

ABOUT THE AUTHOR:

Bushra Anam: I am a theoretical physicist with a PhD in Physics from the University of Auckland, specialising in computational simulation and high-performance computing. In my current role as a research scientist at the University of Canterbury, NZ, in collaboration with Purdue University, USA, I have been working on projects that develop data-driven models for eco-friendly ferroelectric materials. My expertise lies in utilizing advanced computational simulations and modelling techniques to gain valuable insights into complex systems and phenomena. I apply mathematical algorithms and programming languages used in simulation software, such as first principal calculations, VASP, VESTA, and Quantum Expresso, on a regular basis. With a command over various modelling tools and techniques, I accurately represent and simulate materials at the atomic and molecular levels. Collaborating with interdisciplinary teams, I apply computational modelling to real-world problems in materials science, chemistry, and engineering. My research is particularly focused on 2D-Materials, energy-efficient lead-free materials, smart sensors, and wearable devices. Passionate about the potential of computational modelling to drive scientific discovery and innovation, I strive to tackle complex research questions and provide insights that inform the development of new materials, technologies, and processes.

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Session 2 (Chair: Ms Janet Stacey), September 17, 2024, 1:30 PM - 2:30 PM

AIS Explorer: Connecting Decision Makers with Complex Models to battle Aquatic Invasive Species in Minnesota

Nick Snellgrove[1], Dr Petra Muellner[1,2], Dr Amy Kinsley[3], Dr Alex Bajcz[3], Dr Nick Phelps[3]
[1] Epi-interactive, [2] Massey University, [3] University of Minnesota
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ABSTRACT

Aquatic invasive species are a huge threat to ecosystems health in Minnesota. With over 10,000 water bodies across the state, having up-to-date data and decision support is critical. Researchers at the University of Minnesota's Aquatic Invasive Species Research Center (MAISRC) have created four complex R and Python models to better understand both spread of infestations and effect of control measures to support lake managers.

The AIS Explorer combines a large body of research on invasive species dynamics into a publicly accessible and user-friendly web application. The application first launched in 2020 with two distinct risk assessments and has since expanded to include additional analyses. Automated report generation and user authentication was added over time and the geographical scale of the app was extended recently to include the State of Wisconsin, The AIS Explorer is kept up to date with supporting cloud-infrastructure including an automated AWS (Amazon Web Services) pipeline, so that the AIS Explorer is always sharing the latest available research insights to support on-the-ground biosecurity. Come learn about how the AIS Explorer and its supporting cloud infrastructure empowers lake managers and decision-makers to make research backed decisions and effectively combat the spread of invasive species in Minnesota and Wisconsin.

ABOUT THE AUTHOR(S)

Nick Snellgrove is a Tech Lead at Epi Interactive, a Wellington based B-Corp that empowers research and aims to connect data, science and people. He is a passionate software developer with a focus on building fit-for-purpose solutions in R and Shiny, with a love of spatial data visualizations. He has been working with collaborators at the University of Minnesota on the AIS Explorer project since its conception in early 2020, from the early UX development all the way through to the cloud infrastructure components.

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Session 3 (Session Chair: Dr Georgina Rae), September 17, 2024, 2:50 PM - 3:35 PM

Self-hosted LLMs – A weather forecast LLM case study

Maxime Rio, Tristan Meyers, Chris Brandolino
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ABSTRACT

Training a Large Language Model (LLM) requires computational resources beyond the reach of many. However, with the release of high quality opensource LLMs and the availability of community developed optimised inference engines like llama.cpp, it is becoming easier to deploy an LLM-based service on premises without the need to rely on third party services.

In this talk, we will detail the approach we took to design a simple weather forecasting service with LLM-generated texts at NIWA to support our explorations of this technology. We will present how we leveraged open-source tools like Llamafile to quickly experiment with different LLMs, how we deployed it on NeSI HPC resources via Slurm and combined it with NIWA APIs. Finally, we will show how we combined everything in a Streamlit-based interactive dashboard to allow operational NIWA weather forecasters to experiment with prompt engineering and rate models outputs. One focus of this talk is on the accessibility of these tools for RSEs to quickly implement LLM services.

ABOUT THE AUTHOR(S)

Dr Maxime Rio is a data scientist at NIWA. He has been working for more than 10 years as research software engineer, helping scientist develop, optimise and deploy large scale data analysis pipelines and machine learning models. His scientific interest is in scalable Bayesian statistics.

Mr Tristan Meyers is an operational meteorologist with a background in data science and analytics. He is currently interested in leveraging emerging technologies to generate new forecasting tools.

Mr Chris Brandolino is a meteorologist at NIWA with more than 25 years of international experience, including with the Australian Bureau of Meteorology, and as a television meteorologist in New York state. At NIWA, Chris engages with media as a science communicator and works with end users of meteorological products and services. Additionally, Chris leads a talented team that includes climate and data scientists, as well as NIWA's Forecasting Services team.

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Session 3 (Session Chair: Dr Georgina Rae), September 17, 2024, 2:50 PM - 3:35 PM

Developing a Julia interface to the DACE C++ library

Chris Scott [(1)], Jack Yarndley [(2)], Adam Evans [(2)], Alberto Fossà [(3)], Alex Pletzer [(1)], Roberto Armellin [(2)]
(1) NeSI, (2) The University of Auckland, (3) The University of Texas at Austin
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ABSTRACT

The automatic computation of Taylor expansions has found numerous applications in Physics and Engineering. Initially developed for studying the motion of particles in particle beam accelerators, differential algebra leverages the algebra of truncated Taylor polynomials to automatically compute multivariate and arbitrary-order Taylor expansions of complex functions, including those required for numerical propagation. The original code was developed in COSY-Infinity and later translated into C++ for the European Space Agency, facilitating applications such as nonlinear uncertainty propagation of space objects and spacecraft guidance algorithms. This project introduces a Julia wrapper for the DACE C++ package. Julia is typically easier to learn and faster to develop code in when compared to compiled languages like C++, while still achieving good performance. As such, the Julia interface will enable easier access for students and researchers worldwide.

In this presentation we will share our experience of using the CxxWrap.jl package to create a Julia interface to the DACE C++ library and will also share some early applications of the library.

ABOUT THE AUTHOR(S)

- Chris Scott is a Research Software Engineer at NeSI
- Roberto Armellin is a Professor of Astrodynamics at Te Pūnaha Ātea - Space Institute
- Jack Yarndley is a PhD student at Te Pūnaha Ātea - Space Institute
- Alberto Fossà is a Postdoctoral Fellow at the Oden Institute for Computational Engineering and Sciences
- Adam Evans is a PhD student at Te Pūnaha Ātea - Space Institute
- Alex Pletzer is a Research Software Engineer for NeSI based at NIWA

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Keynote Presentation (Chair: Maxime Rio), September 18, 2024, 9:30 AM - 10:40 AM

Connecting communities with cutting-edge research: The intersection of software engineering, community engagement, and innovation

Chris Scott [(1)], Jack Yarndley [(2)], Adam Evans [(2)], Alberto Fossà [(3)], Alex Pletzer [(1)], Roberto Armellin [(2)]
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ABSTRACT

In an era where technology continually reshapes research landscapes, the role of research software is pivotal in driving scientific progress and societal impact. This presentation showcases how a regional research institute, outside major townships, is making a genuine impact on world-class research while maintaining a connection with the community.

It is often acknowledged that research and its impact are not always synonymous. In the area of medical research, it takes time for research to make an impact in the community – and direct benefits to the participants are rare. Adding to this is the lack of data standards between different research communities, and other research barriers.

To address this disconnect, better engagement is a solution – research engagement that brings the community alongside throughout the process, with timely reciprocity, fosters a better understanding of the research. This mutual understanding and trust are essential for genuine relationships. The talk will highlight the role of Research Software Engineering (RSE) in connecting innovation with tangible outcomes for the local community, particularly in addressing real-world challenges such as accessibility and underrepresentation.

For the research communities around Aotearoa New Zealand, the collaborative discussions and interdisciplinary partnerships central to RSE are crucial for maximising the impact of software innovations. Our attempt to keep core values for research in check by embedding CARE principles into our operational practices will be outlined, while FAIR principles help develop robust tools and maximise the value of collected data. This abstract has been co-authored by Eryn Kwon, Joshua McGeown, Maryam Tayebi, Leigh Potter, Samantha Holdsworth from the Mātai Medical Research Institute.

ABOUT THE AUTHOR(S)

Dr. Eryn Kwon completed a Bachelor of Engineering and Science (conjoint) from the University of Auckland, majoring in biomedical engineering, physics and chemistry. She started working on the forensic modelling project first as her Master's degree in Mechanical Engineering at the University of Auckland, which continued into her PhD. Eryn is currently working on several mild traumatic brain injury (mTBI) projects, investigating early detection and modelling of the injury, which is a joint project between Mātai Medical Research Institute alongside the Auckland Bioengineering Institute, Centre for Brain Research, and the Faculty of Medical & Health Sciences at the University of Auckland. Leveraging from her PhD experience in modelling large and rapid deformation to the complex biological structure (brain), her recent work focused on obtaining data to build foundations to mTBI biomarker detection platform. When combined with the advanced MR imaging capability of Mātai, the data will result in an accurate computational model of mTBI providing objective assessment and prognosis specific to each individual and impact scenario.

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Session 4 (Session Chair: Dr Wolfgang Hayek), September 18, 2024, 11:00 AM - 12:00 PM

Offline Automatic Speech Recognition Using Streamlit

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ABSTRACT

Automatic Speech Recognition is a useful tool in many fields where interviews are used in research. There are many commercial automatic speech recognition transcription services such as: Otter.ai, Rumi.ai, Speak.ai, Dragon Voice, etc. An issue with these services is that the audio must be sent to servers, usually offshore for New Zealand, to be processed by the company's machine learning models. This is of particular concern when researchers are dealing with indigenous data, especially Māori data in our case, in which steps should be taken to keep data onshore since it belongs to the people it is taken from. A solution for this is to run models on a local webserver so that data never leaves the university and sensitive data can be removed immediately. We have developed such an application using streamlit.io python framework where researchers can safely transcribe their interviews with no data being stored after transcription.

ABOUT THE AUTHOR(S)

Michael hails from the shores of California where he got his Bachelor of Arts in Physics from University of California, Berkeley. He then switched to Mechanical Engineering and Mechatronics where he received his PhD from University of Canterbury in 2022. Since then, he has been employed as a part time Postdoctoral Fellow in Chemical and Process Engineering under the Biomolecular Interaction Centre and as an Assistant eResearch Consultant at the University of Canterbury. In his free time, he does his own research into various claw back fields, digital art and game development, and walks amongst the trees.

Session 4 (Session Chair: Dr Wolfgang Hayek), September 18, 2024, 11:00 AM - 12:00 PM

Enabling innovation and collaboration with NeSI's Research Developer Cloud

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ABSTRACT

In September 2023, the New Zealand eScience Infrastructure (NeSI) launched its new Research Developer Cloud, built on top of Flexible HPC (Flexi HPC), a new high-performance private cloud platform. The Research Developer Cloud started off with a list of Infrastructure-as-a-Service style cloud offerings, or essential building blocks such as compute, storage, network, images, and identity services. It enables Research Software Engineers and DevOps experts to design, build, and host solutions to enable their research organisation and communities.

This talk covers the use cases from early access tenants, including Manaaki Whenua – Landcare Research, GNS, and AUGMENT from the Auckland Bioengineering Institute at Waipapa Taumata Rau. These tenants had challenges to explore, such as bridging interactive elements with NeSI HPC use cases, hosting institutional services that were siloed into a more accessible manner, and pulling from the growing expertise of NeSI and the RSE/DevOps communities to build and iterate solutions in a sustainable, collaborative, and reproducible.

The Research Developer Cloud is different from other public cloud offerings through its focus on collaborating with the tenants to guide and learn from them with good DevOps practices. We aim to continuously build patterns that can be applied to future tenants and broader communities across the NZ research sector for solving challenging problems that have elements of commonality. Infrastructure as code approach using Terraform and Ansible will be highlighted as an example of automating the deployment pipelines and enabling robust collaboration.

This talk will reflect on our learnings from these early partner tenants and share what is coming next for the Research Developer Cloud.

ABOUT THE AUTHOR(S)

Jun Huh is a Product Manager at NeSI. Jun brings his experience from start-up industries into the field of eResearch. He has been involved in data management and data sovereignty-related projects in the recent past years, including the Aotearoa Genomic Data Repository and Rakeiora Pathfinder project. Recently he has been focused on service design facilitation to help launch NeSI's new Flexible HPC and Research Developer Cloud.

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Session 5 (Session Chair: Dr Rina Hannaford), September 18, 2024, 1:00 PM - 1:42 PM

Managing Scientific Software with Spack

Wolfgang Hayek
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Managing scientific software is an essential, but not always favourite part of a research software engineer's life. Throw dependencies as well as platform, hardware, and system software upgrades into the mix, and life can become difficult very quickly. Tools like the Conda and Pip package managers have largely solved, or at least alleviated these issues for Python and other commonly used software, but they have limitations when it comes to building more complex software from source with, e.g., different compilers, microarchitectures, build variants, and parallelisation.

In recent years, the Spack package manager has emerged as a powerful way of managing such builds. Spack is a community-developed tool that supports sharing build recipes, source code, and binary packages with local and global communities. It enables system administrators to provide large software stacks with automated builds and deployment, and users to extend these stacks or install their own software packages quickly and with (relative) ease.

In this demo, I will introduce Spack and demonstrate how it can be used to build software environments from scratch. I will highlight Spack's strengths and discuss some of the difficulties I encountered when setting up software stacks, in particular with regards to handling dependencies.

ABOUT THE AUTHOR(S)

Wolfgang Hayek is a HPC Research Software Engineer at NIWA, and group manager of NIWA's scientific programming group, with many years of experience in scientific computing and HPC.

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Session 5 (Session Chair: Dr Rina Hannaford), September 18, 2024, 1:00 PM - 1:42 PM

Utilising design elements to enhance research communication

Shanna Tervoort-McLeod[1], Petra Muellner[1,2], Uli Muellner[1]…
[1] Epi-interactive, [2] Massey University
shanna@epi-interactive.com

ABSTRACT

Effective communication of research findings is essential for empowering stakeholders with the knowledge to create meaningful impact and to support science-based decision making. This talk will explore how design elements can be harnessed to improve clarity, accessibility, and engagement with research. By integrating design thinking into research software development, researchers can communicate their finding quickly, accurately and to a wider audience.

We will explore key design elements such as colour, layout, hierarchy and iconography, and demonstrate how these can be applied to research communication. Case studies will illustrate successful examples where thoughtful design has bridged the gap between complex scientific data and stakeholder understanding, allowing scientific outputs to be integrated in day-to-day decision making. The session will also highlight the importance of iterative feedback and collaboration with the target audience.

ABOUT THE AUTHOR(S)

Shanna Tervoort-McLeod

Shanna is the design lead at Epi-interactive — a Wellington based B-Corp that empowers research and aims to connect data, science and people. She is passionate about creating stunning dashboard interfaces and data visualisations. Her focus is visually communicating data analytics in a way the makes the information accessible and easy to understand for the target audience, be it the public, data scientists or decision makers. She is experienced in UX/UI design, in particular translating scientific or technical information into user-friendly and intuitive bespoke dashboards.

RSE Community discussion, updates and closing remarks. (BOF on ZOOM), September 18, 2024, 1:40 PM - 2:40 PM

Charting a path towards a sustainable RSE-AUNZ community

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ABSTRACT

Please join us to hear from fellow RSEs about the challenges they face, what they are doing to make research a better place for RSEs, and provide feedback on the needs of the RSE community in New Zealand Aotearoa. The outcomes of this BoF will be shared openly and reported back to the RSE-AUNZ steering committee.

This BoF would be of interest to people who:

- Develop research software and are worried about career progression,
- Want to make the research software more visible,
- Streamline and scale research workflows but feel undervalued,
- Balance researcher needs with good software practices, and
- Make research software easier to use.

It would also be useful to those who manage RSEs or who struggle to recruit or maintain RSEs within their project lifecycles, and those who would like to help sustain this community.

Objectives would be to solicit feedback and discussion about the following topics :

- What are the needs of the community and is the RSE-AUNZ meeting those needs?
- What can we do to get more active community participation?
- Do we need to apply for grants to help sustain the community, as per the US-RSE?
- How can we ensure greater equity and inclusion within the RSE-AUNZ community?

ABOUT THE AUTHOR(S)

As a Research Communities Advisor, Mercedes Randell engages with researchers to understand their needs, promotes NeSI's services, and provides support for the effective use of high-performance computing resources. By gathering user feedback, she contributes to strategic improvements, ensuring NeSI's infrastructure meets New Zealand's evolving research demands. Additionally, Mercedes is an experienced Clinical Research Scientist specialising in advanced research methodologies, behavioural investigations, and surgical safety models. Her expertise encompasses cognitive neuroscience, just culture, human factors, hierarchy, and power. Mercedes is dedicated to improving individual awareness, behaviour, and cognitive skills.

Rowland Mosbergen has 25 years of experience as a generalist in highly complex environments in the not-for-profit, private, and research sectors and is a Research Software Engineer since 2010. Over his career he has delivered over $230 million of value in business improvements, recruited 4 multi-disciplinary teams and grown 2 more, and has a strong sales and marketing background. Building an inclusive vision and creating buy-in with marginalised stakeholders within complex environments is his specialty. Rowland founded Practical Diversity and Inclusion, a boutique consultancy that extends best practice in Diversity, Equity, and Inclusion (DEI) and NFP organisational development. He has underpinned DEI in team building, international recruitment, establishment of governance processes, mentoring programs, panels and conferences, keynotes, and community fundraising.