# HPC Carpentry

An Overview of HPC Carpentry's Activities

Jannetta Steyn, Newcastle University, UK

Toby Hodges, Andrew Reid, Annajiat Alim Rasel, Benson Muite, Trevor Keller, Wirawan Purwanto

September 09, 2025





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# HPC means we have choices

1. **H**ardwood
2. **P**lywood
3. **C**hip board

https://commons.wikimedia.org/wiki/File:S1,_S2,_S3_(3542257521).jpg

https://commons.wikimedia.org/wiki/File:Spruce_plywood.JPG

https://media.wickes.co.uk/is/image/wickes/N0705_164516_00





HPC means we have choices
1. Hardwood
2. Plywood
3. Chip board

1. HPC could potentially stand for hardwood, plywood and chip board

# But that has nothing to do with anything ...

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HPC CARPENTRY





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1. Hardwood
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1. But, this type of HPC actually has nothing to do with what I'm about to tell you but I thought I'd mention it anyway.

# Overview

1. What is The Carpentries
2. A Very Brief History of The Carpentries
3. Where does HPC Carpentry fit?
4. Current Status
5. Roadmap
6. The mini version
7. Comms Channels





Overview

1. What is The Carpentries
2. A Very Brief History of The Carpentries
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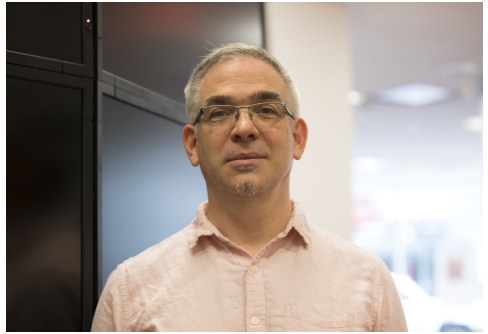
5. Roadmap
6. The mini version
7. Comms Channels

What we will look at is what The Carpentries is about and how it came into existence. Most of you are probably quite familiar with it anyway so it will be very short. We'll then look at what HPC Carpentry is and how that came about. What the current status of the HPC Carpentries is and what our future plans are. I wouldn't be myself if I didn't squeeze a bit of the miniHPC in here, so I'll quickly mention that and then I'll leave you with ways to get into contact us so that you too can join us in brining HPC Carpentries to researchers.

# A Very Brief History of The Carpentries

- It all started with this guy –>
- … in 1998



Dr Greg Wilson
https://carleton.ca/scs/?p=14196





It all started back in 1998 with Greg Wilson. I was watching a YouTube video of a talk he gave in 2014 at PyCon. And I don't think I could summarise it better than this quote from that talk

# This is what Greg said about Software Carpentries

**We are lab skills for scientific computing**. This project started because I was working with physicists and astronomers using first generation and parallel computers. And they would come into my office with their 50,000 lines of Fortran and ask me to make it a zillion times faster. And they had never heard of version control and weren't really sure why they should be writing functions because nobody every taught them. And it is unfair to look down on people if they are not doing things right if you have never shown them how.

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# Where does HPC Carpentry fit?

1. Knowing about Git and functions does not quite solve all problems.
2. Researchers with HPC requirements do not necessarily know how to effectively scale their applications
3. HPC facility operators become frustrated by non-knowledgable users making use of shared resources.
4. Candidate solution: Use Carpentries techniques.





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4. Candidate solution: Use Carpentries techniques.

1. So once you write using functions and your code is in GitHub, you try running it on an HPC and you might find it runs a bit faster because it just so happens that the login node has a better spec than your average laptop or desktop. But people start yelling at you for running stuff on the login node and you don't know what the problem is because you've never heard about the Slurm scheduler thing and you neither does MPI sound familiar
2. Using the Carpentries' style and pedagogy we HPC Carpentry address this problem

# How did it all begin

- Earliest commit 2013
- Peter Steinbach blog post (2017) - HPC in a day
- CarpentryCon 2018, 2020, 2022
- Super Computing BoF 17, 18, 19, 21





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1. The earliest commit I could find in the hpc-carpentry organisation was 2013. I watched a recording of a presentation given by Andrew Reid at SIGHPC about a year ago to get an idea of the history of HPC Carpentry and these were some of the events that Andrew mentioned that were significant in the spread of the word of HPC Carpentry, by talking to people, running workshops and getting feedback.

# Where are we now?

1. We are doing things In the Carpentries Way
   - two day setting
   - get feedback
   - students type along with instructors
2. two main takeaways:
   - muscle memory
   - vocabulary
3. not experts after two days but:
   - know what answer looks like
   - know how to find answers





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- HPC Intro has been reworked
- Using Amdahl executable rather than having students write and compile it
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# Roadmap





Roadmap

# Comms Channels

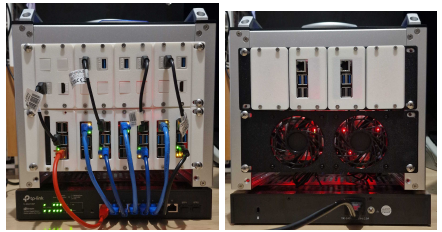




Comms Channels

# A miniHPC

- CarpentriesOffline started about four years go (2022 SSI Fellowship).
- We decided we need an HPC version too due to the difficulties associated with getting access to HPCs for training.
- Raspberry Pi 4s, one login node, five compute node, one access point
- The same open source software stack as many HPCs: Slurm, lmod, munge
- EESSI for software



Front and Back





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# Your Help is Needed

Do you have any suggestions for more domain-specific conferences where we could reach members of HPC Carpentry's target audience of learners and or potential instructors hosts for workshops.





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Ask for suggestions for domain-specific conferences where we could reach members of HPC Carpentry's target audience of learners and/or potential instructors/hosts for workshops.

# Resources

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