



HPC CARPENTRY

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 Carpentry

An Overview of HPC Carpentry's Activities

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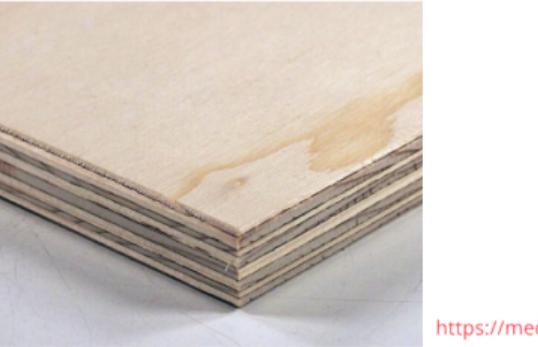
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HPC means we have choices

1.

Hardwood



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



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

Plywood

Chip board



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

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└ HPC means we have choices

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

1. Hardwood

2. Plywood

3. Chip board

But that has nothing to do with anything ...

- 1. Hardwood
- 2. Plywood
- 3. Chip board



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



https://media.wickes.co.uk/is/image/wickes/N0705_16430000000000000000



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

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.

1. Hardwood

2. Plywood

3. Chip board

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



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└ Overview

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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 bringing HPC Carpentries to researchers.

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- 2. A Very Brief History of The Carpentries
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A Very Brief History of The Carpentries

► It all started with this guy ->



- It all started with this guy ->
- ... in 1998

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



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└ A Very Brief History of The Carpentries

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This is what Greg said about Software Carpentry

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.

<https://www.youtube.com/watch?v=FtKO619O5g0>



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<https://carpentries.org/courses/what-is-software-carpentry/>

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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└ Where does HPC Carpentry fit?

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

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How did it all begin

Peter Steinbach (2017)
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- ▶ 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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└ How did it all begin

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.

▶ Earliest commit 2013
▶ Peter Steinbach blog post (2017) - HPC in a day
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Where are we now?

- two day setting
 - students type along with instructors
 - get feedback
- two main takeaways:
- muscle memory
 - vocabulary
- not experts after two days but:
- know what answer looks like
 - know how to find answers

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 - two day setting
 - students type along with instructors
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2. two main takeaways:
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Current Status

- We used to have our own shell lesson but that has now been deprecated in favour of the Software Carpentry lesson.
- HPC Intro has been reworked
- Using Amdahl executable rather than having students write and compile it
- Two workflow lesson available. For Snowflake and Maestro



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Roadmap

► HPC Carpentry is currently in the Lesson Incubator

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► We have a checklist of items (from The Carpentries Handbook) that we are working on

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Roadmap

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- ▶ We have a checklist of items (from The Carpentries Handbook) that we are working on
- 1. Each Lesson Program will have a Lesson Program Governance Committee.
- 2. Each Lesson Program Governance Committee will comply with the general committee policy as described in the Carpentries Handbook.
- 3. For example: In addition, each Lesson Program Governance Committee:
- 4. Maintains a minimum of 3 members to serve on the committee and act as a point of contact with The Carpentries Board of Directors and Core Team.
- 5. Follows all general policies as outlined by The Carpentries, including, but not limited to, the Code of Conduct.

A miniHPC

- ▶ CarpentriesOffline started about four years ago (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



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Comms Channels

- ▶ Come talk to me
- ▶ Visit our website
- ▶ Join our bi-weekly meetings
- ▶ Join our channel in The Carpentries' Slack workspace



HPC Carpentry



CarpentriesOffline



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HPC Carpentry

CarpentriesOffline

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?
- ▶ Are you interested in teaching, organising and/or hosting HPC Carpentry workshops?
- ▶ Are you interested in getting involved with maintaining the lessons?



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Resources

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