MATH FACULTY COMPUTING FACILITY (MFCF)

MFCF's newsletter with updates on the Math Faculty computing environment.

Fall 2023…computing environment upgrades, software upgrades and more!

MFCF staff changes

Please say hello to our new administrative and financial coordinator, **Krista Denny**! Krista is new to the University and is looking forward to working with the MFCF team!

The end of October marks the end an era in MFCF with the retirement of **Dani Roloson**. Dani has been with us for over 35 years and has always been willing to assist others, often adding a joke while doing so. We wish Dani all the best in his retirement!

MFCF has been successful in hiring a new staff member with a focus on research computing. While MFCF has a long track record in helping purchase, set up, and support research computing (e.g. through CFI grants) a focus on research computing is new. **Derek Steinmoeller** joins MFCF from Aquanty; a rare move from industry to the academic environment. He has a broad technical background ranging over web computing, systems support for large scale hydrology, LMS, and finite element methods. Derek has a deep commitment to open source software and Linux, and this commitment provides MFCF an important resource going forward. There is potential for synergy with like-minded graduate students, postdocs and faculty on a range of projects.

For the remainder of the F23 term Derek will be acclimating to the MFCF environment, but will have time for discussions. Please contact the MFCF Director (mmstastn@uwaterloo.ca) and we can set up a time to meet as a group. In the medium term (by end of W24) a program of co-funded project work will be set up to allow for concerted effort on directly assisting researchers with longer-term research computing projects.

macOS 14.0 Sonoma - don't install yet

We strongly suggest that you DO NOT upgrade to macOS Sonoma (14.0). There were early problems with printing. We haven't yet completed testing of the OS and current

versions of applications, so we have blocked the pop-up on MFCF-managed machines that invites you to install the update. We expect that by January 2024 it will be safe to upgrade to Sonoma.

Computing environment upgrades

In our Spring 2023 newsletter we mentioned that new servers were on the way. Now in production are:

- two new servers in the biglinux pool for large memory and multi-process jobs
- one new server in the fastlinux pool for short fast jobs
- a new eight-node Linux cluster for parallel processing
- a Windows server with three NVIDIA T4 GPUs for machine learning / AI

As a reminder, we doubled the memory and added four NVIDIA A100 GPUs to one of the GPU servers earlier this year.

For details about these computing resources, see:
https://uwaterloo.ca/math-faculty-computing-facility/services/research-and-staff-linux-servers
https://uwaterloo.ca/math-faculty-computing-facility/services/research-and-staff-windows-servers

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Application software upgrades

For the fall term we upgraded the major mathematical software applications across the research and teaching environments for both Linux and Windows. This included R 4.3.1, Julia 1.9.2, MATLAB 2022b, Maple 2023.0, and others.

Using the Slurm resource manager

Access to our specialty computing resources (clusters and GPU servers) is managed by the Slurm resource manager. This is the same scheduler that the Digital Research Alliance (formerly Compute Canada) uses for its resources. We now offer a presentation on using Slurm including hands-on demos. We're planning to conduct one later this term. Let us know if your research group is interested.

Our web pages about using Slurm have been updated. Take a fresh look at

https://uwaterloo.ca/math-faculty-computing-facility/services/specialty-research-linux-servers

https://uwaterloo.ca/math-faculty-computing-facility/services/service-catalogue-teaching-linux/teaching-gpu-servers

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External GPU enclosure and GPU laptops for borrowing

MFCF has a GPU in an external enclosure available for borrowing. You can use this with your laptop or desktop PC that does not have its own GPU. We have written an article about some comparisons of MATLAB code on CPU and this GPU that illustrate the speed-ups that may be achieved. The article is published at https://uwaterloo.ca/math-faculty-computing-facility/sites/ca.math-faculty-computing-facility/files/uploads/files/matlab_gpu.pdf Open a ticket if you would like to sign out the external GPU.

We also have several GPU-equipped laptops that you may borrow. This may help you get acquainted with GPU computing before moving up to larger servers. Read about them at https://uwaterloo.ca/math-faculty-computing-facility/services/gpu-loaner-laptops

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Web portal for research IT resources

IST has announced a new web portal for finding research-related IT resources. From their announcement...

"This new portal offers information and convenient access to the IT services available to support research computing at Waterloo, including research data management, advanced research computing, and research computing software. Visit https://uwaterloo.ca/it-services-researchers to discover more about the services available to you at both a Faculty and institutional level."

Help us help you

Questions or problems to report? Do you know a way we could make math computing better? Is there something you'd like to hear about in these newsletters? Do you want to write an article? Email Lori Suess at lcsuess@uwaterloo.ca or fill out a request at https://rt.uwaterloo.ca/SelfService/Forms/MFCF/. We'd love to hear what you have to say!

The fine print

The first 10 people to visit the help centre in MC3017 and give us the 3 staff names mentioned above in staff changes will receive a prize.

MFCF Webpage MFCF Help