

Date: March 10, 2022

To: Jay Alameda, IHPCCS Program Lead and IHPCCS Planning Committee

From: Tonya Miles and Lizanne DeStefano, XSEDE External Evaluation Team

Re: Evaluation of the 2021 International High Performance Computing Summer School (IHPCCS)

The evaluation of the 2021 IHPCCS used a number of surveys to assess students' entry characteristics and expectations (Pre-event Survey), their progress during the Summer School (three mid-point check ins), their perceptions upon exit from the Summer School (Post-event survey), and the experience of the Summer School Mentors (Mentor Post-event Survey). The results of the mid-point check in surveys were distributed to organizers during the Summer School to guide program management in real time and will not be discussed here. Results of the Pre-event Survey, Post-event Survey, and Mentor Post-event Survey are presented here.

2021 IHPCCS Pre-event Survey

Response Rate: 100% (63/63)

An online survey was administered to all admitted students prior to the IHPCCS to ascertain expectations and capture the demographics of the participants. Highlights of the pre-event survey included:

- Participants' highest expectations for the IHPCCS were:
 - Participation of students from other countries. (Mean: 4.55; SD: .63)
 - Meaningful engagement with a mentor. (Mean: 4.47; SD: .66)
 - Meaningful engagement with other students. (Mean: 4.52; SD: .71)
 - Apply knowledge/skills to my research. (Mean: 4.89; SD: .31)
- Students generally reported that they had access to training and computing resources at their institutions and were most interested in the networking and mentoring possibilities of IHPCCS.
- Participants expected the Summer School to be moderately challenging.
- Participants were mostly masters/doctoral students (73%) and Postdocs (16%). Five were recent graduates and employed; one was applying to grad school.
- Most participants were male (64%).
- Thirty-one percent of the students were first generation college students.
- Among the 18 U.S. participants, 44% were Asian, 11% African American, 17% Latinx, 22% White and 6% "other".

Full pre-event survey results are included at the end of this report.

2021 IHPCCS Post-event Survey

Response rate: 60% (33/55)

On the last day of the Summer School, students were asked to complete an online survey asking them to evaluate their experience. Sixty percent of students responded. Results were quite positive:

- 91% of participants reported that their goals for IHPCCS were achieved.
- 97% felt that the Summer School was well organized.
- 97% believed that the Code of Conduct was effective at setting expectations.
- 81% were satisfied with their mentor interactions.
- 87% were satisfied with technical assistance and support they received during the hands-on and extra help sessions.
- 91% reported that the skills/knowledge gained in the Summer School would significantly contribute to their research.
- 94% would rate their Summer School experience as successful.
- Students requested even more hands-on exercises.
- While most students were not significantly disadvantaged with the online format, they felt that it was difficult to connect student to student, especially with students that they did not know already.
- Additional topics suggested for future Summer Schools include I/O optimization, quantum computing, Python parallel computing, alternative to OpenACC, how HPC is applied in different fields, cloud computing, and task-based parallelism.
- 88% would return as mentors.

Complete results for the post-event survey are at the end of this report.

2021 IHCSS Mentor Post-event Survey

Response rate: 33% (18/55)

Mentorship is an important component of the Summer School. The online format in 2021 required a complete rethinking of the mentoring component to accommodate time zones.

- Mentors were satisfied with the Mentoring Overview (88%), the mentor matching process (83%), and the quality of engagement (100%).
- They were less satisfied with their engagement with other mentors/instructors (56%) and less likely to keep in touch with mentees (53%) or other mentors/instructors (61%) than in previous years.
- The returning mentor program was effective (70%).
- Some mentors would have appreciated more guidance on effective virtual mentoring and greater connection with other mentors.

Results for the mentor survey are at the end of this report.

Recommendations

In general, the virtual format worked well, and students enjoyed and benefited from participation. It may be helpful to employ some virtual activities in future summer schools. For example, it may be easier to secure distinguished keynote or plenary speakers if they can present virtually. It may also be helpful to hold one or two virtual events for mentors to interact with each other or to touch base with Summer School alumni throughout the year.

There were almost twice as many male participants as female participants in the 2021 Summer School. This may not have been as noticeable given the virtual and sometimes asynchronous nature of the 2021 school, but each year, students encourage IHPCSS leadership to strive for gender balance. In future years, recruitment and selection processes should attend to gender balance.

IHPCSS students would like mechanisms to connect with each other and with mentors and faculty after the Summer School. Previous cohorts have created Facebook groups, but it is unclear how active these have remained. It may be time to create a LinkedIn or some sort of alumni site that promotes interaction and networking.

Perhaps related to the virtual nature of the 2021 School, students advocated for more and longer hands-on sessions. Some suggested narrowing the number of topics and providing deeper exploration of that smaller range. For future Summer Schools it may be advantageous to cover fewer topics and allow for more time for hands-on practice or networking. Another option is that each Summer School could have a theme with a carefully curated set of topics associated with that theme.

Mentors, especially those not on the steering committee and student mentors, would like more preparation and opportunities to interact before and during the Summer School. Perhaps that happens more naturally during the in-person events, but even then, it may be advisable to plan for regular mentor interaction.

As in years past, participants would like clear guidance on how to prepare and what to expect from the Summer School. They would like to receive this information as soon as possible and in an easy-to-access format. In 2021, there were many communication mechanisms used. These were sometimes not well coordinated, leaving students confused.

Survey Results

2021 IHPCCS Pre-event Survey

Response rate: 100% (63/63)

How strongly do you agree with the following statements regarding the International HPC Summer School?

Question	Strongly disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly agree (5)		Mean	Std Dev	Total
	%	Count	%	Count	%	Count	%	Count	%	Count			
I applied because my institution does not offer courses in this area.	13%	7	20%	11	34%	19	16%	9	18%	10	3.07	1.25	56
I applied because it fits my schedule.	7%	4	9%	5	40%	22	35%	19	9%	5	3.29	1.00	55
I applied because I want access to XSEDE / PRACE / RIKEN / SciNet resources.	9%	5	7%	4	45%	25	34%	19	5%	3	3.20	0.97	56
I expect that the participation of students from other countries will enhance the quality of the school.	0%	0	0%	0	7%	4	31%	17	62%	34	4.55	0.63	55
I expect to meaningfully engage with a mentor during the school.	0%	0	0%	0	9%	5	35%	19	56%	31	4.47	0.66	55
I expect to meaningfully engage with other students during the school.	0%	0	0%	0	13%	7	22%	12	65%	35	4.52	0.71	54
I expect to apply the knowledge / skills I gain during the school to my work/research.	0%	0	0%	0	0%	0	11%	6	89%	49	4.89	0.31	55

If you disagree or strongly disagree with any of the statements above, please explain why here:

- *I have access to plenty of computing resources, so that is not a motivation for me.*
- *We have courses at my school regarding HPC*
- *I expect that the value of this course will be to see how other researchers use HPC in their work -- can learn a lot more via imitation than trying to follow a user manual. Definitely doesn't fit easily into my schedule (a year earlier it would have) -- but still looking forward to it*
- *I already have sufficient computational resources*
- *My institution does offer some HPC courses*
- *I disagree with some of the statements above as the main motivation to apply to this school was not due to the reasons mentioned in them. Mainly, I applied to gain new knowledge about the best practices of high performance computing and apply them in my daily research activities.*
- *I am hoping that this program will help me learn from experts and peers who have similar interests and problems in their research. I hope that this program will help me advance in my own research.*
- *Because I needed to arrange my schedule to participate.*
- *My university offers courses in the area of HPC. I have completed the course, but I would like to learn more about the state of the arts and inter-disciplinary HPC research.*
- *I disagreed with the first option since UBC offers such -- however, I believe, that the HPC summer school will be much more condensed and well suited for me at this time.*
- *There are resources to HPC trainings at my institution, but there are usually focused to a single of the topics treated in this summer school.*
- *I disagree with the statement about resources access because my goal in this school is education and not the usage of HPC servers itself. So, it doesn't matter for me which resources to use.*
- *My school has HPC-related courses*
- *The main reason for attending the school is to be able to write my own parallel computing codes and for the exposure I will get at international level (meeting different people from the same field etc.)*
- *At the time of application, the statements I attested strongly disagree with were not on my mind and therefore not a part of my motivation*

How challenging do you expect this Summer School to be?

Answer	%	Count
Very difficult	7%	4
Difficult	45%	25
Neutral	48%	27
Easy	0%	0
Very easy	0%	0
Total	100%	56

What is your current job title/academic status?

Answer	%	Count
Undergraduate student	0%	0
Master's student	9%	5
Doctoral student	64%	35
Postdoctoral fellow	16%	9
Other	11%	6
Total	100%	55

Other

- *I have completed my masters this year in Feb, now working as a SE*
- *corporate researcher*
- *Postdoctoral scholar*
- *Systems Developer and PhD student*
- *Future PhD student*
- *Recent graduate*

Are you a first generation college student? (Note that a first-generation college student is defined as a student whose parent(s)/legal guardian(s) have not completed a bachelor's degree at a four-year college or university.)

Answer	%	Count
Yes	31%	17
No	69%	38
Total	100%	55

Gender

Answer	%	Count
Male	64%	35
Female	35%	19
Other:	0%	0
Prefer not to disclose	2%	1
Total	100%	55

Race/ethnicity

Answer	%	Count
Asian	44%	8
Black or African American	11%	2
Hawaiian or other Pacific Islander	0%	0
Hispanic or Latino	17%	3
Native American or Alaska Native	0%	0
White	22%	4
Other (please specify)	6%	1
Total	100%	18

Other (please specify)

- *Middle Eastern*

If you have any additional comments regarding the Summer School, please include them here.

- *Looking forward to it!*
- *Many thanks for organizing such a comprehensive event and make it free of charge for the participants.*
- *N/A*
- *I appreciate this initiative very much, and am grateful to the organizers!*
- *I am super excited! Thanks to the organizers!*
- *Thank you for organizing despite the challenging circumstances!*

2021 IHPCCS Post-event Survey

Response rate: 60% (33/55)

To what extent do you agree with the following statements regarding your experience in the International HPC Summer School?

Question	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	Std Dev	Total
	%	Count	%	Count	%	Count	%	Count	%	Count			
My goals for attending the international HPC Summer School were achieved.	0%	0	0%	0	9%	3	69%	22	22%	7	4.13	0.54	32
The summer school was well organized.	0%	0	0%	0	3%	1	33%	11	64%	21	4.61	0.55	33
I am satisfied with the delivery format of the Summer School.	0%	0	9%	3	24%	8	36%	12	30%	10	3.88	0.95	33
I am satisfied with the amount of hands-on activities.	3%	1	9%	3	18%	6	39%	13	30%	10	3.85	1.05	33
I am satisfied with my interaction with my mentor during the mentoring/work sessions.	0%	0	3%	1	15%	5	39%	13	42%	14	4.21	0.81	33
I am satisfied with the technical assistance available during the Summer School (i.e. mentors, session facilitators, extra help sessions, etc).	0%	0	0%	0	12%	4	39%	13	48%	16	4.36	0.69	33
I meaningfully engaged with a mentor during the Summer School.	3%	1	0%	0	27%	9	33%	11	36%	12	4.00	0.95	33
I plan on keeping in contact with my mentor after the Summer School.	3%	1	9%	3	18%	6	39%	13	30%	10	3.85	1.05	33
I plan on keeping in contact with a staff member after the Summer School.	0%	0	6%	2	33%	11	45%	15	15%	5	3.70	0.80	33
I am satisfied with the student/mentor matching process.	6%	2	6%	2	21%	7	42%	14	24%	8	3.73	1.08	33
I meaningfully engaged with other students at the Summer School.	0%	0	9%	3	27%	9	42%	14	21%	7	3.76	0.89	33
The fact that students from other countries participated in the Summer School contributed to my learning.	0%	0	3%	1	30%	10	33%	11	33%	11	3.97	0.87	33

Question	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	Std Dev	Total
	%	Count	%	Count	%	Count	%	Count	%	Count			
The knowledge / skills I gained during this Summer School will significantly contribute to my work / research.	0%	0	0%	0	9%	3	52%	17	39%	13	4.30	0.63	33
I know the next step for me to build on what I learned at this Summer School.	0%	0	0%	0	15%	5	55%	18	30%	10	4.15	0.66	33
I am interested in learning more about the resources / opportunities available through SciNet, PRACE, RIKEN, or XSEDE as a result of this experience.	0%	0	0%	0	9%	3	39%	13	52%	17	4.42	0.65	33
I plan on obtaining (or currently have) access to SciNet, PRACE, RIKEN, or XSEDE resources.	0%	0	0%	0	24%	8	33%	11	42%	14	4.18	0.80	33
Overall I would rate my experience as successful.	0%	0	0%	0	6%	2	61%	20	33%	11	4.27	0.57	33

If you selected "disagree" or "strongly disagree," please explain here.

- *I felt there could be more hands-on exercises. This definitely required extra time but some more time could be allocated for hands-on in the summer school.*
- *The mentor I was assigned too didn't attend mentoring activities in my time zone, but I meaningfully engaged with other mentors.*
- *I understand the challenges posed by the online nature of the workshop, but would have preferred a much more significant amount of hands-on experience, especially in machine learning.*
- *The virtual format of the school did not manage to detach me from my regular routine.*
- *The virtual format was a bit challenging, especially to communicate with other students. An in person event would have been easier to make connections, but given the circumstances the school was very well organised and executed.*

All attendees were required to agree to the Code of Conduct when accepting their invitation to the Summer School. To what extent do you agree with the following statements regarding the Code of Conduct.

Question	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	Std Dev	Total
	%	Count	%	Count	%	Count	%	Count	%	Count			
The Code of Conduct was effective at setting expectations.	0%	0	3%	1	0%	0	52%	16	45%	14	4.39	0.66	31
The Code of Conduct made me feel the event was inclusive.	0%	0	3%	1	6%	2	48%	15	42%	13	4.29	0.73	31
The Code of Conduct made me feel I could report issues if needed.	0%	0	3%	1	0%	0	48%	15	48%	15	4.42	0.66	31

If you selected "disagree" or "strongly disagree," please explain here.

- I think the contents of the Code of Conduct were very logical and very few people will need it explained, why the statements in there are important. The CC did not change anything for me as the people already made me feel included. And had I had a problem I would have gone with it to the person regardless of there being a CC. Thanks so much for an awesome summer school!*
- I don't remember reading it, sorry (although I assume that I did)*

How challenging did you find the Summer School?

Answer	%	Count
Very difficult	0%	0
Difficult	27%	9
Neutral	64%	21
Easy	9%	3
Very easy	0%	0
Total	100%	33

What was the most important thing that you gained from the Summer School?

- *I knew about the ongoing fields of scope that I need to develop in the HPC area.*
- *I learnt a lot about the parallel programming basics from this summer school.*
- *Experience with parallel programming and scientific network*
- *Learning about accelerator programming and some career advice.*
- *GPU program optimization*
- *Some insights on building my future career.*
- *I realized I'm not the only one who faced hard real life problems during the PhD studies. I learnt how to deal with them a little more effectively.*
- *The feeling that I'm not alone facing the problems of researchers' life*
- *Visualization*
- *Networking with HPC experts*
- *Insights and tips by mentors and staff.*
- *Broad overviews of concepts and technologies.*
- *Technical skills.*
- *Potential of openACC*
- *The most important thing for me was the insight that I gained through the seminars, hands on training, mentoring and networking, in terms of the state of the art in hpc, and which technologies are best suited for my scientific work during my phd.*
- *I revised my parallel programming concepts (MPI, openMP, hybrid) and applied on the programming challenge. I also learnt about important programming practices and profiling tools. I also met researchers in my research area as well as other domains. I learnt a lot from them. My mentor also provided good recommendations and I enjoyed conversations with him and other staff members.*
- *international networking many materials that helps me keep learning*
- *Connections and some basics of software/techniques that are used in HPC.*
- *New insight into novel topics*
- *Better understanding of using MPI and OpenACC paradigms effectively. Overview and hands-on exercises for Python HPC, Spark and Deep Learning.*
- *I can explain my opinion and research to other people in English.*
- *I learned about modern trends in HPC and how the community was applying HPC techniques in their work. Being a physicist myself, I got a better glimpse of how someone in a different field looks at HPC.*

- *Better understanding of accelerators*
- *Understanding OpenACC*

How is this program unique from other programs/trainings you have attended?

- *I never attended any program in the HPC area like this before.*
- *Typically, other programs are for shorter duration (~a day) and so, doesn't have enough time to cover a broad range of topics, which was not the case in the summer school.*
- *I did not attend other HPC trainings*
- *The interdisciplinary nature of the program was unique*
- *The mentorship and support on the material covered during the summer school was really amazing. Also, this summer-school was the best interactive online session I have attended in the COVID time.*
- *It has a more "human" and "warm" approach to it*
- *Mentors were very close to attendants*
- *Great*
- *This program has more variety than other programs I attended before.*
- *The extra bits outside of the lecture sessions i.e. the mentoring etc*
- *Mentorship*
- *Staff plus mentors. Regarding online format: combination of zoom, gathertown and moodle.*
- *I have not attended other summer schools.*
- *Trainees from different countries and fields*
- *Participating in an international event gives the opportunity to the participants to engage with researchers from all over the world, exchange ideas about their work-life balance, challenges and lifestyle. This interaction proved to be quite valuable, since it motivated me to continue my research while at the same time exploring the tools offered by HPC.*
- *The program included variety of topics which weren't included in other trainings or my coursework at University. The instructors and speakers also linked these topics to real-world experience. The social event, mentoring sessions and poster session also gave us the opportunity to engage with other researchers.*
- *there are many mentor times*
- *It was focused towards HPC and everyone was familiar or used HPC.*
- *The breadth of the program was very unique and really allowed to see how all the elements fit together.*

- *The mentoring session is the unique program.*
- *The uniqueness of this program lies in the fact that not only does it have a very international and diverse audience, it also attracts students from different fields of study.*
- *The mentorship program is quite a unique feature of this school*
- *Much more engaging*

What topics would you suggest for future Summer Schools?

- *Exercise, practice and solution to the practice could be increased and at the basic level.*
- *I think the current topics itself are wonderful. Had the summer school been in-person rather than zoom, it would have been much more effective!*
- *I/O optimization, shell scripting can be introduced in workflow tools or HPC engineering as it is quite useful to provide automation at small scales.*
- *quantum computing*
- *General modern software engineering practices: how to use a VCS effectively, how to write tests and organize development activities around them (I feel this is useful even in HPC!)*
- *Advanced tracks for the same topics*
- *Python Parallel Computing Lecture*
- *Alternatives to OpenACC. A bit of CUDA*
- *Less topics but more practices on either parallel or acceleration computing*
- *I would suggest incorporating a track about advanced accelerator programming with OpenACC and CUDA. Also, HPC with Python really opened my horizons.*
- *data security*
- *Comparison of different fields usage of HPC. Their methods, software, etc...*
- *more emphasis on python, less on older languages like fortran*
- *CUDA programming*
- *More focus on hands-on exercises with more dedicated time for applying the knowledge.*
- *Quantum computing*
- *I found the choice of topics excellent. I suggest continuing on the same line with training in parallel and GPU programming, as well as occasional talks on how HPC is applied in different sciences.*
- *Cloud computing, Task based parallelism*

Have you previously applied to this Summer School?

Answer	%	Count
Yes, one time	12%	4
Yes, two or more times	0%	0
No, this is the first time I have applied	88%	29
Total	100%	33

Would you be interested in returning to the Summer School as a mentor?

Answer	%	Count
Yes	88%	29
No	12%	4
Total	100%	33

Please note any additional comments you would like to make regarding the International HPC Summer School or its sponsor organizations, SciNet, PRACE, RIKEN AICS, and XSEDE.

- The summer school was very well organized covering a range of topics. I thank all the team members for giving us a good experience as much as possible in zoom. Had the summer school been in-person, it would have been more effective. I understand this was not an option this year! Nevertheless, the organizers have done a wonderful job of accommodating people from different time zones efficiently.*
- I am really grateful to organizers for putting great effort in organizing a very instructive and interactive summer school. The insights I have gained here will be very useful in my research and future career. Thank you.*
- Thanks a lot for your work. I know that organizing a virtual event is frustrating but your efforts made it an acceptable experience. Even if I couldn't attend as much as I wanted, I definitely felt "included".*
- NA*
- Well organised event!*
- I felt that the experience was quite stunted due to the online nature, and that I missed on a potentially much more meaningful experience. I wonder if we are allowed to apply again in the future and be considered for in-person participation.*

- *Thanks to all the organizers--such a great job. I am very thankful for the opportunities the summer school has given me.*
- *Thank you very much for the offering!*
- *The keynote presentations were indeed very informative and gave real motivation to researchers such as myself, that do not have access to advanced HPC systems, to do their best in trying out the resources available during the summer schools. The presentations about the real world applications of hpc were an eye opener. Thank you very much for this opportunity!!*
- *I had a great experience at the virtual summer school. It was well-organized and covered variety of interesting topics related to my research. Due to the parallel sessions in different timezones, I couldn't interact with participants and staff members from other timezones. I would like to attend in-person school next time it is offered.*
- *Thank you very much for your organization!!!!*
- *Great job. Thanks for sponsoring it and supporting this summer school.*
- *Thank you for making the school happend and working towards making it available for everyone around the world. The organisation and coordination of the whole school exceeded my expectations.*
- *I believe the agenda was in need of dedicated small 5-min breaks. I frequently found myself unable to go grab a glass of water or visit the bathroom if I would not want to miss any moment from the school.*
- *Congratulations and many thanks for the great organization. It was a pity not to be able to have an in-person event, nevertheless, the usage you give to the gathertown and slack platforms made the experience really close to a "normal" summer school.*
- *Unfortunately, the year delay meant that the timing wasn't quite so convenient. Nevertheless, I found the school engaging and useful -- I'm glad I attended*

2021 IHPCCS Mentor Post-event Survey

Response rate: 33% (18/55)

To what extent do you agree with the following statements regarding your experience at the International HPC Summer School?

Question	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Mean	Std Dev	Total
	%	Count	%	Count	%	Count	%	Count	%	Count			
The Mentoring Overview session was useful.	0%	0	0%	0	13%	2	50%	8	38%	6	4.25	0.66	16
I am satisfied with the mentee / mentor matching process.	0%	0	6%	1	11%	2	39%	7	44%	8	4.22	0.85	18
I engaged meaningfully with student(s) / mentee(s).	0%	0	0%	0	0%	0	71%	12	29%	5	4.29	0.46	17
I plan on keeping in contact with a student / mentee after the summer school.	0%	0	18%	3	29%	5	35%	6	18%	3	3.53	0.98	17
I engaged meaningfully with other mentor(s) / instructor(s).	6%	1	6%	1	33%	6	39%	7	17%	3	3.56	1.01	18
I plan on keeping in contact with other mentor(s) / instructor(s) after the summer school.	0%	0	11%	2	28%	5	33%	6	28%	5	3.78	0.97	18
I was given sufficient guidance from the planning committee to adequately prepare for the summer school.	11%	2	0%	0	28%	5	39%	7	22%	4	3.61	1.16	18
The returning mentor program was effective.	0%	0	6%	1	24%	4	35%	6	35%	6	4.00	0.91	17

If you selected "disagree" or "strongly disagree," please explain here:

- *The guidance was generally unclear for me, and I ended up at several sessions where the organisers were not expecting my presence. A large number of students assigned to me did not end up actually attending, so in the end I mentored only one student. I was asked to join as a support for several technical sessions (and indicated so in advance), but I received no brief on what support I was to give, and in two cases the teachers did not expect me to join. Let me be clear though: I think the rest of the summer school was extremely well organised, it's just the returning mentor programme that was unclear and confusingly organised in many areas, at least in my personal case. Perhaps there was a line of (e-mail) conversation that I wasn't included in? I also missed a session where mentors could actually socialise with each other, or perhaps it wasn't clearly indicated where that opportunity took place. In summary, the events themselves ran well, but the advance communication was too little and too unclear in many areas, causing me to be insufficiently prepared.*
- *Insufficiently strong connection with assigned mentees, plus their plans already seemed strongly set for post PhD work having just defended or planning to defend in two weeks.*
- *There was little chance to interact with other mentors.*
- *Returning mentors normally also help through asynchronous support in hand-on sessions. This was pretty limited in this digital event.*
- *I felt that I was only given guidance on what to do as a mentor at the very last minute (after an email was already sent to the mentees).*
- *My time is limited, so while I'm happy to engage in the summer school for a full week each year (not to mention preparations and selecting students!), I simply don't have the bandwidth to also start offering my time to mentor students outside my own research group the rest of the year.*

What are some of the strengths of this summer school?

- *The teachers, the quality of the students, the top-notch course material and the effectiveness of the gather.town platform.*
- *The combination of lectures and hands-on sessions for the HPC topics, and the mentoring experience.*
- *Lecture series of HPC programming is well organized and very practical.*
- *The broad exposure and connections available to make to experts across different skillsets in HPC. The international component adds a valuable addition towards including perspectives outside of just one region of the world.*
- *The inclusion of mentoring in the school is fantastic.*
- *The very strength of IHPCSS is direct interactions and networking among potentially all participants including staff and presenters. This was naturally limited in this digital event the audience separated in two groups (time zones)*
- *The topics covered with expertise from the lecturers and helpers. Having a portion of the program that encourages networking, mentoring and discussions in a safe environment.*
- *I believe that IHPCSS offers a decent number of sessions in various fields related to HPC which those involved won't find easily elsewhere. Moreover, the people involved in the sessions, Dr Urbanic, Dr Wong, Ramses and many others for example, trully meaningful and important for someone studying at the other side of the world to be able to interact with those people and get the most of it.*
- *Probably networking*
- *Great teaching and networking foundations despite it being virtual.*
- *Significant effort made by the organizers before and during the event made for a smooth, well-delivered summer school. Speakers were extremely knowledgable. There were sufficient opportunities for informal engagement. Color coding the spreadsheet contents by timezone was helpful.*
- *Warm atmosphere and inclusiveness of students; high level of teaching and practical materials; advanced topics.*
- *I thought that the summer school managed to foster some pretty meaningful networking and communication opportunities. The use of gather.town really worked, in fact, I would say that poster sessions were more effective for me, as there was not the noisy backdrop when we'd have a conversation with the authors. Also, having ways to have conversations with mentees, was incredibly valuable. I think that it worked, despite being virtual.*
- *Nice international mix of students and instructors, and that we have a setup that keeps evolving both in format and contents!*

How is this program unique from other programs or trainings you have attended?

- *It's much more personalized, and of very high quality.*
- *I have visited other trainings/programs, but none have a mentoring system on the level of IHPCSS.*
- *Programming contest is very unique.*
- *The content is well curated and easily accessible for students to learn from and there's a strong emphasis (which can often be lacking in similar programs) towards offering space for developing relationships among not only the students and mentors but also the students themselves, for example via the planned mentorship sessions as well as social events for students (although this is much more difficult to manage in a virtual environment).*
- *Mentoring and the mix of science talks and training sessions are unique to the IHPCSS.*
- *The broadness of topics covered from science to technical presentations, hands-off and networking.*
- *The diversity of topics and career backgrounds represented amongst organizers, lecturers, mentors and participants.*
- *Firstly, many presenters that I consider top and enjoy listening to what they have to say, what's new and promising in their opinion, what's not. Secondly, Participants from literally everywhere, both in terms of nationality and background. There are no other training events I've been to that offer such diversity.*
- *I had not attended any similar programs as a mentor but my experience was great.*
- *The use of gather.town was novel to me. I understood the value and the features.*
- *You learn a lot about high performance computing, especially if you are a beginner. Also I am very happy about the program of returning mentors, which would be definitely useful for many other schools, workshops and training courses to consider.*
- *I think it provides opportunities for personal and professional connections that are simply not possible in other training events. This makes it a much higher-impact training event, going far beyond the technical content provided. I also think that the science talks integrated into the program help provide valuable context as to why advanced computing is important, and likely important to all of the participants.*

How can this summer school be improved?

- *Interactive sessions should sometimes be more interactive (not just lectures). Mentors should be more closely involved in the school, so that others can benefit from them more effectively. Advance communication should be clearer, e.g. about which people are expected in which time slots. The combination of Moodle, online spreadsheets, e-mail and Slack was a bit over the top, and made it confusing to figure out what info can be found where. I would suggest using Gather.town, Zoom and then one other platform at most for the main comms.*
- *Perhaps a "bring your own software" Slack channel structure: participants organize in BoF groups around different performance measurement software and parallel programming paradigms, and help each other measure the performance and parallelize their software. The IHPCSS participants can then be "helpers" or they can work on their own software with a "helper".*
- *Personalized mentoring is less effective at online.*
- *Encourage again regular checkins with mentor/mentee groups and perhaps allow for switching and/or self-selection of mentor pairings during the school as logistically feasible. I believe a return to the in person form of the event will help substantially as well though hopefully there could still be options for partial participation by remote attendees in future summer schools.*
- *While I understand the reasons, not being virtual would improve the summer school.*
- *Back to inperson-event*
- *Maybe a little more communication/organization with the mentors/helpers.*
- *I'm sure a non-virtual summer school would be much better. However if going virtual in the future one thing that might be improved is to make it less "all over the place": we had the agenda page on ihpcss.org, some material and information on Moodle, discussions on Slack and gather.town, and lectures on Zoom.*
- *Maybe some more examples/exercises on how to develop professional-grade software at large scale.*
- *Moodle was not useful. The materials could have been shared in a Google Drive folder. File naming matters within Google drive. Consistent naming conventions help, as do descriptive file names. The schedule spreadsheet was "Moodle IHPCSS-2021". The "Moodle" has nothing to do with the schedule. Stick with using Google Drive for sharing documents, rather than mixing email and Google Drive and Moodle. Data formats matter - I received a .ods file, a .txt file, and numerous Excel tables in Google docs. For organizing content on Google Drive, I suggest having three folders: * A folder for all attendees (students, mentors, speakers, organizers). Contains files for all attendees * A folder for mentors and speakers and organizers. Contains files for mentors and speakers, as well as the folder for all attendees * A folder for organizers. Contains files for organizers and the folder for mentors/speakers The nested folder structure enables*

access management. All emails should link to content in the Google Drive. No attachments. That way, even if people miss the email they can view the content or be pointed to the content.

- To take place physically instead of virtually again! :-) Hope it will happen sooner!
- I think expanding the hands-on training, providing more time for exercises, would be beneficial (whether in-person or virtual). The summer school packed a lot into the time available, some un-packing may be good.

Would you be willing to participate in another summer school offered in this format?

Answer	%	Count
Yes	83%	15
Maybe	6%	1
No (please explain)	11%	2
Total	100%	18

No (please explain)

- Participation at online with a time difference is very difficult.
- Being able to schedule virtual availability slightly earlier would be a significant improvement towards being able to coordinate with other work obligations as a mentor.

**Is there anyone you can think of that would make a good mentor at the Summer School?
Please provide as much information about them as possible so that the committee can follow up (i.e., name, email, website).**

- *Robin Richardson (Dutch e-Science Centre) Olivier Hoenen (ITER)*
- *Shin-ichiro Shima, s_shima@sim.u-hyogo.ac.jp, <https://s-shima-lab.sakura.ne.jp/en/>
Ryusuke Numata, numata@gsis.u-hyogo.ac.jp, <https://rnumata.org/>*
- *Matt Norman <https://www.ornl.gov/staff-profile/matthew-r-norman>
normanmr@ornl.gov*
- *One of the participants, Jose A. Fonseca, showed interest during on how to get involved in the future as helper/mentor.*
- *Maybe just as an idea to think of (to ease multidisciplinary which becomes more and more important). To invite teachers or experts in specific non-computing fields (for example, CFD, theoretical physics or math) and do, maybe, one day in-depth course, learning only the necessary part, in order to move on with deeper HPC programming excercises in those fields next days. With best regards.*

Please note any additional comments you would like to make.

- *Overall I enjoyed the event, but felt I couldn't quite contribute as much as I would have liked due to the unclear communication leading up to it.*
- *Keep doing a great job!*
- *I think it was almost as good as it can be given the circumstances (being online).*
- *Thanks for getting the resources together, effectively communicating before and during the summer school, and for actively working to educate graduate students in HPC.*