

**Co-author declaration for the following joint paper:**

This declaration should describe the research contribution of the candidate, the main supervisor (where he/she is an associate author) and the other two most central authors (the corresponding author must be among them). If applicable, the contributions from other PhD candidates who has or intend to include the paper in a thesis should be described. Contributions from master students should be described.

**Authors:** Jonas Markussen, Lars Bjørlykke Kristiansen, Håkon Kvale Stensland, Friedrich Seifert, Carsten Griwodz, Pål Halvorsen

**Title:** Flexible Device Sharing in PCIe Clusters using Device Lending

**Journal:** *Proceedings of the 47th International Conference on Parallel Processing Companion (ICPP'18), 2018*

Jonas Markussen's independent contribution:

☒ First author ☒ Corresponding author ☐ Other

Markussen came up with the idea for, designed and implemented the MDEV/KVM extension to Device Lending. Markussen also implemented the mechanism for facilitating P2P between devices in different lenders, including the mechanism for resolving I/O addresses. Markussen identified performance issues with the original Device Lending implementation, and he contributed to investigating several solutions for improving the data path performance. Markussen wrote most of the text, and he designed and performed all the experiments, including writing the necessary performance benchmarking programs.

Lars Bjørlykke Kristiansen

☐ First author ☐ Main supervisor ☐ Corresponding author ☐ PhD candidate ☒ Other

Kristiansen contributed to the implementation by helping to extend the existing Device Lending code base and also provided feedback on the MDEV implementation. He also participated in analysing performance issues and provided several reviews of the paper text.

Carsten Griwodz

☐ First author ☐ Main supervisor ☐ Corresponding author ☐ PhD candidate ☒ Other

Griwodz reviewed the paper several times, and provided feedback on the text.

Pål Halvorsen

☐ First author ☐ Main supervisor ☐ Corresponding author ☐ PhD candidate ☒ Other

Halvorsen participated in the planning of the paper, and provided feedback and suggestions for improvements on all parts of the paper.

Håkon Kvale Stensland

☐ First author ☒ Main supervisor ☐ Corresponding author ☐ PhD candidate ☐ Other

Stensland participated in the planning of the paper, and provided feedback and review of the paper text.

Has this paper been, or will this paper be part of another doctoral degree thesis?

Yes: ☐ No: ☒

If yes, elaborate:



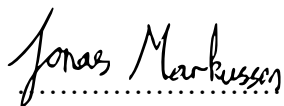
Contributions from master students:

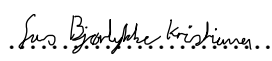
Do you verify that Jonas Markussen has contributed to this joint paper as described above?

Yes: ☒ No: ☐

If no, specify:

**Co-author's signatures:**

  
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