Dear Bridget,

You kindly provided me with a letter of support for various software development projects. We have now completed one of the projects, and I am ready to distribute the code for a new fast local correlation function. In the package attached, you will find an updated version of FindEM for particle picking, called FindEM2.

This new FindEM2 uses a custom mask for the template. This could be an oval or more accurately defined mask, and will be better than the circular mask previously used, for non-circular shaped particles. The code is multi-threaded, and so it is also much faster than the old one.

We are releasing it under the GNU GPLv3, maintaining our copyright.

I am happy to help with integrating the code into your Appion or other software.

To cite it: we have not submitted our manuscript yet, but I will keep you updated.

Best regards,
Alan

From Neil:

I already modified FindEM1 to be multithreaded and other speed improvements, but it might be interesting to have multiple masks. I'll have to read the paper.

Neil

From Dmitry:

I'd be interested to see how much of a qualitative difference a customized mask makes ... I'd guess that the manuscript for FindEM2 should have that information? I find that for most applications, the regular template-correlator works very well, assuming that you then take some time to filter your "false positive" picks with alignment and classification. I can imagine that there would be cases where a customized mask would be beneficial for discriminating subtle differences. The speed has not been a bottleneck for me personally, as I find that rough (30°) angular increments are usually sufficient, but it would play a role as you add more templates and/or use finer angular increments for searching. Perhaps let's put it on the agenda for the next Appion workshop?

Dmitry