Minutes of CCPI Management Meeting July 3 2013, CR02, R1 RAL

Attendees

Phil Withers (CCPI Chair), University of Manchester (PW)
Martin Turner, University of Manchester (MT)
Barry Searle, STFC (BS)
David Worth, STFC (DW)
Christoph Rau, DLS (CR)
Rob Atwood, DLS (RA)
Daniil Kazantsev, RC@H (DK) - EPSRC Fellow in Iterative Reconstruction
Richard Boardman, University of Southampton (RB)
Thomas Blumensath, University of Southampton (TB)

Apologies

Mark Williams, University of Warwick
Alison Davenport, University of Birmingham
Ian Sinclair, University of Southampton
Graham Davis, Queen Mary University London
Bill Lionheart, University of Manchester (BL)
Mark Basham, DLS
Peter Lee, University of Manchester RC@H
Andrew Ramsey, Nikon Metrology

Review of minutes from 26/11/12 meeting

Mailing lists for membership interest groups have been set up

- Quantification
- Image Reconstruction
- Image based modelling
- Instrumentation

We now need to publicise these lists and use them. People can go to https://www.jiscmail.ac.uk/ and search for ccpi to find the lists and subscribe. **Action: All** to pass on this information.

Codeathon still hasn't happened. BL is running a algorithms day @ Manchester under EU BUST consortia. This should be advertised to the CCP members when date sorted. **Action: DW** to identify the date with BL and then publicise to CCP via mailing lists.

Visitor Program There have been many visitors to the MIRAN project (funded by EPSRC) which overlapped with the CCP area so we have not organised any in the first phase of theproject. CCP funds are still intact to use in the next phase. **Action:** ideas for visitors please.

Mid-Term Review

Networking

There are over 250 people on the CCP mailing list and 8 industrial contacts.

Promotional material

We need 4 videos for the mid-term review most likely to be hosted on YouTube with links from CCPi website. Possible videos identified are:

- DLS video – story of reconstruction. Currently with University of Birmingham who are checking soundtrack. **Action: RA** to chase this and pass to BS.
- Bath tutorial video on reconstruction. **Action: BS** to contact Bath to get video.
    - Bath are developing a website with training/tutorial material on including videos which, if ready in time, will become the CCPi website. **Action: BS** to monitor.
- RB offered big dinosaur video from Southampton. **Action: RB** & **BS** to sort.
- RA offered small fossils video from DLS. **Action: RA** & **BS** to sort.
- PW offered chrysalis video from Manchester. **Action: MT** to contact Tristan to find video.

All videos need a consistent front information "slide". Text on what the subject of the video is and an institution logo should be provided along with the video. **Action: BS** to add this along with a CCPi logo to the videos.

Workshops

DJW has collated names from MXIF workshops in reconstruction and quantification and Avizo training organised by HiP [Total 29 individuals]. We need names/numbers from Miran workshops to get this above 40 required. **Action: DW** to contact BL to get this information.

CCPi is co-sponsoring a meeting at the Natural History Museum in September where we have offered 5 industrial awards to cover attendance fees. Advertised on CCPi website but **Action: BS** to advertise this to industrial contacts on mailing lists and ask conference organiser for contacts. This will get us to the target of 5 industrialists attending workshops.

Software

DW – 5 quantification algorithms available in VolView (freeware) and Avizo (commercial)

BS – 2 reconstruction algorithms available

Flagship Project

DK gave an update on his work. He has 2 papers published in conference proceedings and 2 journal papers in progress. He is working on dynamic imaging – considering how objects change in time. His regularisation code is now working on GPUs and he is finding up to 60x speed-up when compared to CPU. **Action: DK** to work on tidying code and then send to BS for distribution. **Action : DW** to demonstrate CCPForge to DK (and others) as a way of keeping track of code changes and managing future development and collaboration.

A missing wedge algorithm has yet to be identified for the CCP. **Action: BS** to ask around. Possibly contact Will Thompson at Manchester.

It would be possible, of course, to say we have moved on to spatio-temporal algorithms and away from simply iterative algorithms.

Parallel funded projects

We know about:

- Research council project to follow up Nicola Wadeson's work
- COST project with EU funding (BL)
- DLS DIAD beamline project
- TB's project on compressed sensing

Action: DJW to contact CCP members for any follow on/parallel projects.

Mid-term report

The important things to be covered are

- Flagship project. **Action: DK** to write a report on his work
- Core support. **Action BS & DW** to write reports on their development work
- 3 Case studies to demonstrate "*how the CCPs are contributing to one or more of the 5 strategic goals put forward in the EPSRC software as an Infrastructure Strategy*". Template for case study is available (max 2 pages).
    - Nicola Wadeson. **Action BS** to contact
    - DW on quantification – collecting algorithms, making available more widely, software engineering. Action DW
    - One other

Reports

Daniil Kazantsev

Recorded above as part of mid-term review. Actions also above!

Thomas Blumensath – Advanced methods in Compressed Sensing

TB gave an overview of compressed sensing and then went on to describe its application to x-ray CT reconstruction. These algorithms are good for limited measurements or when access for scanning is restricted.

A summary of his work to date was available at a recent CCP steering panel.

Action: TB to write a review article on compressed sensing in CT outlining its strengths and weaknesses.

Action: TB to send links to existing code in the CS area to BS.

Promotional Materials

Web site needs some updating. **Action: BS** to add:

- Pictures **Action: All** to send useful pictures of their work to BS**.**
- the 4 theme areas with contact e-mails

It was suggested that we produce other short videos (approx. 1min) that tell the story from scanning through reconstruction to possible quantification. Possibilities are

- University of Southampton – lab based work
- DK – flow through rocks

Future Workshops

Proposed

- Algorithm coding (BL)
- 3D analysis (MT)
- Paraview (RA)
- Image based modelling (PL)
- Science conference for CT people to share their work (MT – HiP/CCPi)
    - Target Feb 2014 in Birmingham. Initial invited talks then 5 min student talks.

We need to find out what training is being offered by members of the CCP. **Action: DW** to collate data.

Need to **advertise** these events so **Action: course organisers** please use the mailing lists and tell BS who will put the info on the CCPi website

Software

Needs advertising. **Action: DW** to send download links to quantification code and plug-ins to BS.

CR asked for plug-ins for ImageJ/Fiji which are widely used at DLS. **Action DW** to investigate how this can be done.

Data sets

There was discussion about data set format TIFF vs HDF5 and the work that is going on to make more use of the latter both to collect data from machines (good for streaming) and to follow through into reconstruction.

BS suggested that it was necessary to start building up data sets for testing and demonstration and so **Action: BS** to take this forward.