"Student – Supervisor Contract": Things to discuss with your supervisor now

Your name:	Ashley Stewart
Your supervisor(s):	Donald Dansereau Thierry Peynot
Your Honours Major coordinator:	Dr Maolin Tang
Your project title:	Occlusion Removal using Light-Field Cameras
The nature of your project:	Theoretical, experimental

The big-picture stuff

What are your supervisor's expectations of your project? (E.g.: expected main results, equipment built, software developed, conference presentations, publications...)

- A light-field camera constructed using Raspberry Pis will be used to capture light-field data for processing
- An algorithm will be developed that can remove occlusions from images and video at specified distances
- The algorithm should be extended to also support live occlusion removal from a video feed
- The final algorithms should be generalised so that they can be applied to light-field data captured from a range of properly calibrated light-field cameras, ensuring the algorithms have value to others
- Images and videos should be generated that demonstrate the algorithms developed
- The images and videos should demonstrate value to a variety of relevant applications, by carefully considering the necessary scene elements that can demonstrate those values (e.g. removing thin objects from view, such as an arthroscope)
- A thesis will be generated that effectively details the research, methods, algorithms, demonstrations and relevance of the project and outcomes
- Key results may be published at a relevant conference/journal (e.g. ACRA)

What are your expectations of this project? (Skills acquired, become an expert in X, experience with specific software / laboratory techniques / theoretical or data processing methods / ...)

- Understanding different ways light-field data can be represented and manipulated
- Understanding of image processing methods
- Understanding of camera calibration methods
- Understanding of occlusion removal methods
- Appreciation of the field of computer-vision
- Appreciation of light-field camera technology, including significance and applications
- Experience with MATLAB, Python, and other relevant technologies
- Experience with electronics
- Experience documenting project work
- Experience in research
- Development of new image-processing algorithms
- Generation of thesis
- Potential publication

Can you think of any potential findings that might warrant a change in the research plan?
A change in the research plan may occur if:

- The camera array is unable to be refined so that accurately calibrated images can be generated
- The algorithms developed are unsuitable for the processing of live video streams – this is because the processing algorithms may be computationally intensive, and possibly will not be able to execute fast enough to keep up with the stream. Parallel processing may have to be explored, or a general algorithm may be developed that can be applied to another live feed.

What do you want to do after you finish your Honours year? (E.g.: Start a Ph.D. – where and what subject? Get a job – what kind? Start your own company? Take your knowledge to a different field?)
Most likely I will continue studying for a PhD, potentially in computer vision but perhaps another field of interest such as Artificial Intelligence. These two fields can certainly be combined. One other area of particular interest to me is intelligent procedural generation for simulation and video games.

What sort of outcomes from your Honours year will help you achieve this goal?
To continue straight into a PhD, I will need to achieve a first class honours result this year. Also, If I am able to publish a paper in relation to my honours project work, it may assist in being admitted into a PhD program. As such, I am interested in publishing my work into the Australian Conference on Robotics and Automation (ACRA) in December 2016, which is held in Brisbane.

The project work completed during my Honours year will also develop skills necessary to complete a PhD, as I will be working on and managing a research project for the duration.

The details

If you have more than one supervisor: Who will be responsible for what?

I have two supervisors for my project. Donald Dansereau will be my primary supervisor. However, in September Donald will be travelling to Stanford University. During this time, I will have contact with Donald remotely via videoconference technology, and Thierry Peynot has offered to assist me otherwise.

Who will you be working with? Are you part of a larger team?

I will be working mostly on my own and with my supervisors. Steve Martin is a technical staff member who has offered to assist with electronics and hardware.

What training / equipment / software / laboratory resources / other resources will you need to complete this project successfully?

To complete the project, I will need:
- A camera array for the capture of light-fields
- Hardware and software to process the light-field data accordingly
- Computer access to develop my thesis and other outcomes

Who will provide the training required? (Supervisor / postdoc / RA / Ph.D. student / technician / someone else?) When are they available to do this?

Outlining specific training at this time may be impractical, as requirements may change overtime. However, it's possible that some training may be necessary in relation to electronics (e.g. soldering, electrical safety). I have already had some informal training through other QUT students during the VRES term, but this may be expanded upon.

Are the resources required available any time? During certain dates? Does your workflow need to be shaped around resource availability?

The resources are available at QUT while S-11 is open. I will also be able to take the light-field camera home, which will be useful especially between semester 1 and 2.

How often does your supervisor expect to meet with you (and for how long each time)?

One face-to-face meeting each week for half an hour, as well as regular email contact.

How often do you expect to meet with your supervisor?

I expect to meet with my supervisor each week, or at least have some email correspondence so that we are both aware of where we are in terms of the project and project resources.

What kind of help will your supervisor give you with the following? -

- Laboratory work / field work / data processing / software or code development
- Writing of the Literature Review
- Preparation of the Project Proposal
- Preparation of seminar presentations
- Writing of the Honours Thesis

My supervisor is happy to look over all deliverables, providing relevant advice for future changes and overall direction.

How will you document your research? Hardcopy lab book, electronic notes or a combination of the two? If electronic, discuss a workable and robust format.

I will document my research using an electronic log-book in the form of a Microsoft Word document. I will also keep a folder of relevant and historical project data.

What is the approximate timeline of your project? (How much time to spend on acquiring results / processing and interpreting the results / writing the thesis?)

Semester 1					
29-Feb	Week 1	Project Proposal			Project work
7-Mar	Week 2				
13-Mar	Week 3				
20-Mar	Week 4		Literature Review		
27-Mar	Break				
3-Apr	Week 5				
10-Apr	Week 6				
17-Apr	Week 7				
24-Apr	Week 8				
1-May	Week 9				
8-May	Week 10			Presentation 1	
15-May	Week 11				
22-May	Week 12				
29-May	Week 13				
25-Jun	Break				
Semester 2					
25-Jul	Week 1				Project work
1-Aug	Week 2				
8-Aug	Week 3				
15-Aug	Week 4	Thesis			
22-Aug	Week 5				
29-Aug	Week 6				
5-Sep	Week 7				
12-Sep	Week 8				
19-Sep	Week 9				
26-Sep	Break				
3-Oct	Week 10		Presentation 2		
10-Oct	Week 11				
17-Oct	Week 12				
24-Oct	Week 13				

Checklist

- ☐ You and your supervisor can see a viable roadmap to make your research project a success
- ☐ Your main expectations and your supervisor's main expectations are aligned
- ☐ You realise that the details of your research plan may change because research projects can take unexpected turns
- ☐ You realise that you have a finite amount of time to complete your project and prepare the Thesis
- ☐ You know that time flies faster than you think it does
- ☐ You realise that, whatever length of time you think a major task will take, it should be multiplied by a factor of ~3
- ☐ You understand that writing is a slow process – start writing up the thesis early
- ☐ You understand that you are in for a year of very hard work

Have an exciting and productive Honours year!
Please complete this document with your supervisor, scan into a PDF and e-mail to k.momot@qut.edu.au and to your Major Coordinator (please refer to Slide 5 in Konstantin's lecture slides from 29/02/16)