

RoboRoos Newsletter September 2014



Its Showtime!



Come and see us at the Royal Adelaide Show, Sept 5th to 14th.

We are in the **Advanced Technology Pavilion (Thomas Edmonds Building)** near the yellow brick road booth.

Daily 9am-6pm

Management Report:

Thank you to all who attended our inaugural AGM. A good number of committee members were voted in and it was great to see the numbers of members present. We all look forward to a successful 2014/15 season and we welcome all our new members and mentors. Don't forget membership fees are now due.

We are moving from our recruitment phase into our training phase of the season and encourage all students and mentors to attend the Systems Engineering course scheduled for Sept 27th at UniSA. We then have some more light-hearted fun organised with a LAN party and movie night planned for Oct School holidays. CAD is being taught at Adelaide Uni on Friday 10th Oct. Software courses begin at beginning of term 4 and an electrical course is planned for 19th October. We encourage students to attend as many of the courses as possible, even if you are not sure it is your favourite area. You may be surprised! Please put them in your diary now.

Check out our newly revised website at www.roboroos.org

Captain's report

On the 24th of August our team had our second annual open day at Glenunga International High School. This year's event was a big success, the set up looked great, there was a great attendance rate and there was a fantastic effort from our students, mentors and parents. The open day was a great improvement in comparison to last year's event and thanks to this we are welcoming a significant number of new students to our FRC team. In regards to open day I would like to give a final thank-you to John Duivestein, Rob Thomas and Wendy Johnson from Glenunga International High School for their help with the event; especially John who sat in to supervise us on a Sunday afternoon, Peter who organised for Channel 7 News to put a short piece on television and every member that helped organise or attended the event; it couldn't be done without you.

This coming week our team will be at the Royal Adelaide Show as part of our outreach; after which our training period begins with a systems engineering course on the 27th of September.

Mila Knezovic.



3D PRINTING

3D printing is an exciting new technology that provides some great opportunities for RoboRoos - other than being great fun in its own right, 3D printing of robot parts - both for the final robot, and prototypes to see how we're going - has the potential to be extremely valuable for the team. This is without considering the personal advantages for students engaged in 3D printing, as it involves 3D design and modelling, understanding materials, and both engineering and electronic challenges.

Unfortunately, the major barrier which prevents most of us from getting into 3D printing is cost. At the moment, a decent 3D printer for small objects is about \$600-\$800, and for a good, high quality 3D printer that has a large print area you are looking at closer to \$1,000 and up. There are some cheaper commercial 3D printers emerging in the market, but they tend to be a lot like the cheap inkjet printer model - sell the printers cheap, but make a fortune with the cost of materials.

The solution is RepRap. The RepRap movement has been driving much of the development of hobbyist 3D printers in recent years. Their goal is to produce low-cost 3D printers that are accessible to everyone by making printers that can print copies of themselves. Which, of course, is where we come in. RoboRoos has been developing a RepRap 3D printer for members. By building it ourselves

we gain a cheap 3D printer, with good specifications, that will help students by involving them in construction of their own printers, teach them about 3D modelling for printing, and encourage them to work together to modify and extend the printer, making it better over time.

As to specifications, the RoboRoos 3D printer is based on the Smartrap, which in turn is based on the Printrbot Simple - both well regarded printers in the marketplace. It has a print area of 250mm x 250mm x 250mm, which is big enough to print many of the parts needed by the robot, and is one of the largest print areas available readily in the consumer market. The printer will support auto-levelling, which will make it more portable and a bit easier to use, and a glass build platform which will be easier to keep clean than aluminium. The power supply is a standard laptop model. It is also a true RepRap - all of the printed parts can be printed by the RoboRoos printer. The software to run the printer is free.

The printer is designed to print PLA, a biodegradable and compostable cellulose-based plastic, which melts at comparatively low temperatures and doesn't require additional equipment (such as a heated platform). Modifying the design will open up other possible materials, such as ABS, which has a higher strength in return for requiring slightly more complex hardware. PLA is readily available online, with a general cost of about \$40 per kg. There is a broad range of colours, including glow in the dark (if it is worth printing, it is worth printing in glow in the dark plastic).

We are still calculating costs, but at the stage we expect each printer to cost between \$250 and \$300 dollars, to cover the costs of the mechanical and electronic parts. We'll give a full breakdown once the design is finalised.

Adam Jenkins,
Software Mentor.

NEXT EVENTS

Royal Adelaide Show Display: Sept 5th to 14th.

Systems Engineering Course: Sept 27th



University of
South Australia



BAE SYSTEMS



**Rockwell
Automation**

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