

The Thumb Report

Tiny satellite + tiny cost + tiny timescale = HUGE RESULTS

June 2016

ThumbSat Partners with Universidad Tecnológica de Tijuana



ThumbSat is extremely proud to announce a partnership with Universidad Tecnológica de Tijuana (UTT) to develop the software needed for many aspects of ThumbSat and ThumbNet.

Dr. César Ortega Corral, Profesor Titular B, Information and Communication Technology, is coordinating a group of students, professors and UTT graduates to develop the various pieces of critical software needed to keep ThumbNet operational and ThumbSat successful in orbit.

Dr. Corral agrees that there is tremendous benefit to the UTT students by working on real world projects, with an impact on people around the globe, instead of simple examples from a text book.

The first project for the UTT team is to finalize the automated tracking station software to help ThumbNet become truly autonomous while tracking ThumbSat satellites in orbit. This software will evolve into a broader platform that will also allow for independent science experiments to be done at each station and report findings back to the ThumbNet server.

Other projects planned will include orbital path modeling, mission firmware, image evaluation, and radio transmission software.

ThumbSat would like to thank the entire UTT staff and all of the volunteer students for their tremendous support!

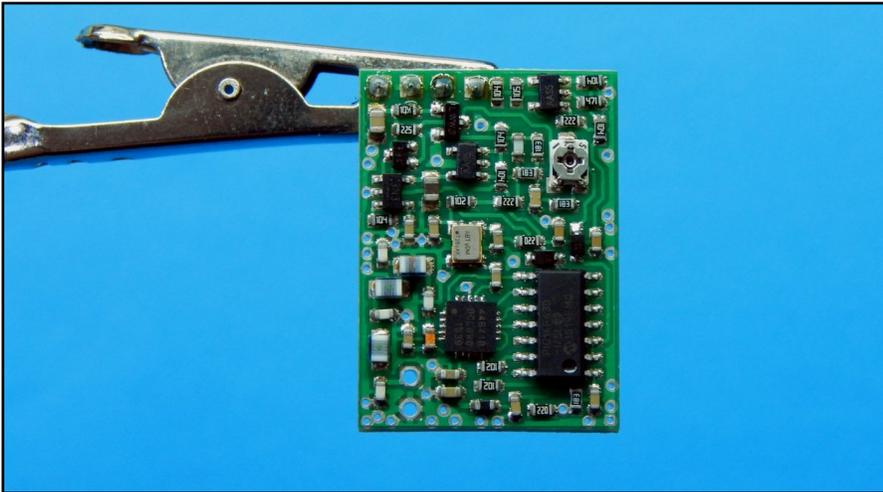
ThumbSat has been accepted to give a presentation at the International Astronautical Congress in Guadalajara, Mexico in September! Conference details can be found [here](#). We are honored to attend!



A beautiful, pure quartz crystal ready to be made into many of the electronic components needed for ThumbSat and ThumbNet!

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What do you do when a 5.5 gram commercial radio module is still too heavy for your satellite? You design a custom circuit that eliminates all the extra components and build your own, of course! Weighing in at 2.55 grams, the radio subsystem for ThumbSat, code named [Rattatosk](#), embraces everything ThumbSat is about: Tiny Satellite. Tiny Cost. Huge Results!

Invasion of the Interns!

Volunteering is not limited to the ThumbNet project alone! We are excited to have several interns working with us this summer who are tasked with developing or improving systems in both the ThumbNet and ThumbSat projects!

Clive Bebbington, University of Leeds, will be developing a full virtual simulation of the ThumbSat and ThumbNet systems to help customers better develop their experiments prior to launch.

Liam Smith, University of Leeds, will project manage sub-orbital flights of ThumbSat as we develop a ThumbSat launch system. Watch out for more news soon on this exciting new project!

RoSario Lopez-Estergaad-Jacobsen, Cranfield University, also will be working on our Thumb Launcher system requirements and feasibility.

Abhilash Medepalli, International Space University, will be working on our experimental payload bay design and mockup as well as evaluating our automatic satellite tracking stations for use in cold, wet environments.

Wenbin Zhang, International Space University, will be working on developing an Earth Observation mission as well as evaluating our automatic satellite tracking stations for use in hot, dry, and sandy environments.

We would like to thank each of these students for their volunteer time over the coming months and look forward to seeing their results.

If you are the type of hands-on, practical, inspired, self-motivated person with initiative, who plays with electronics or software for fun, and who would tinker with mechanics even if you were abandoned on a desert island, we've got projects for you too!!

Keep Current with ThumbSat!

Check out our [Media Page](#) to see published articles!

Check out [ThumbNews](#) for all our newsletters!

May saw us featured in Planète Robots n°39! Check it out [here!](#)



Show us thumb love and shop the [store!](#)



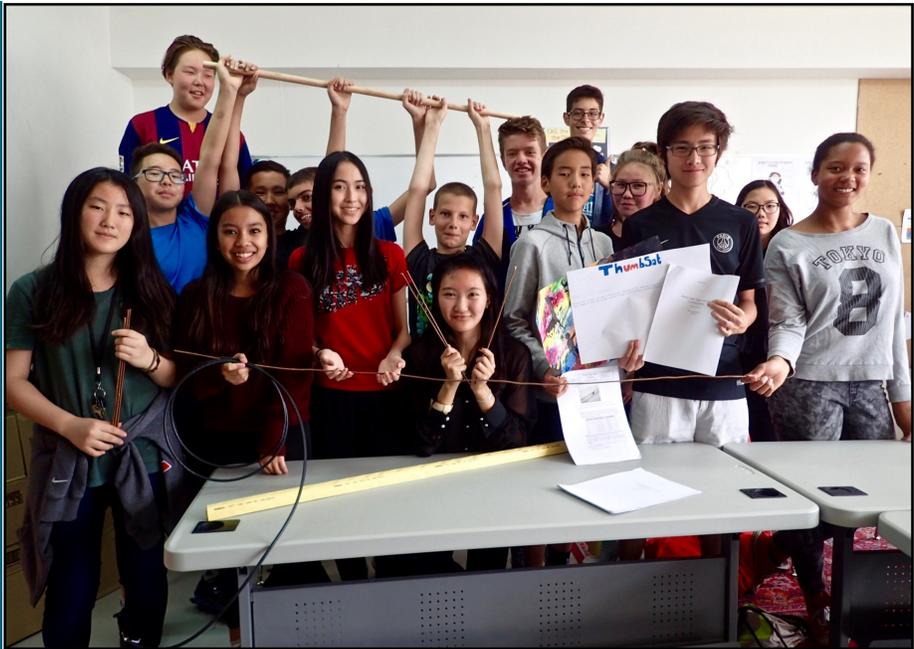
The International School of Ulaanbaatar, Mongolia

Within days of signing up for ThumbNet, the students at The International School of Ulaanbaatar in Mongolia were hard-at-work making progress on their station!

When asked if the students had any difficulties building their antenna, Instructor James Carter replied, "The guide is straightforward enough, I have largely left it to the students (age 13/14) to navigate through the instructions and have just been there to keep them safe and answer questions they may have."

Although school is now on break, they have all the pieces ready and will be able to pick up where they left off next term!

Thank you for participating in ThumbNet!



Our ThumbNet volunteers at The International School of Ulaanbaatar!

ThumbNet...a Global Project!

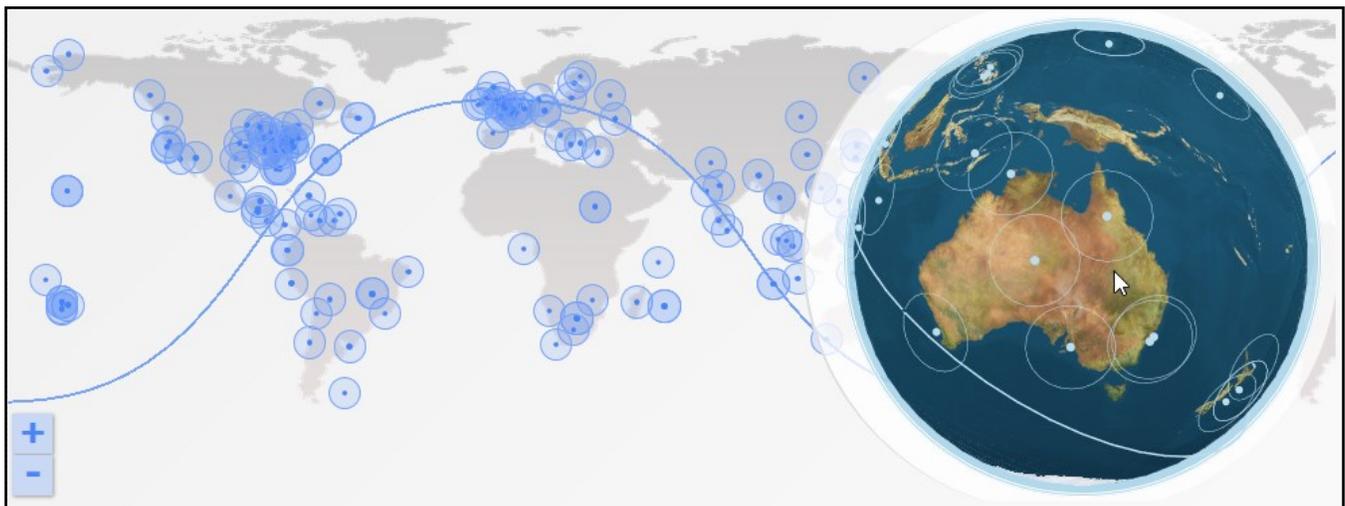
Our ThumbNet network is steadily growing! Currently we have 158 stations and would like to thank all those who have committed to participate! Check out who/what countries are participating [here](#).

Every dot on the map below is a volunteer ThumbNet ground station. We're looking for more volunteers to fill those gaps on the map! Just add a simple antenna to the free radio receiver that we provide, run some software, and hear messages from space or elsewhere within half a day!

The most active volunteers tracking our ThumbSat constellations will receive even more - a free tracking station! All you need is enthusiasm, a small space to mount an antenna/tracker where it can see the sky, a power source, and internet access. No special knowledge, equipment or experience is needed.

It's a great way to learn about Science, Technology, Engineering, and Mathematics, and to be involved in a global project!

Sign up for ThumbNet [here](#)!

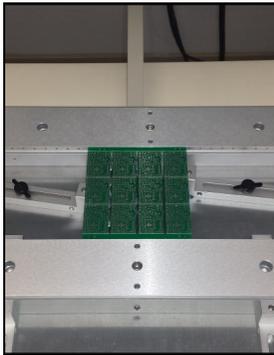


Testing of ThumbSat Continues

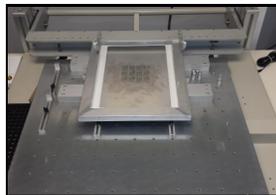
The engineering team continues to test the subsystems of the ThumbSat and Rattatosk boards that were produced last month, and so far, the inspections have been almost exactly as expected.

The testing has suggested a few minor improvements to be made to the next generation of boards, but considering the component density and advance circuitry of ThumbSat, overall, the stability of the circuits is fantastic and the progress has been phenomenal!

It's an exciting time for ThumbSat and the entire team is looking forward to a productive summer of sub-orbital flights, leading on to orbital testing later this year!



Radio Boards, no solder



Solder paste stencil



Applying solder paste through stencil to boards

ThumbSat: Unlocking Space for Everyone!

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