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Nepal earthquake relief: How drones from Mumbai came to the rescue

#NEPAL RELIEF



By Nash David / 08 Jun 2015 , 14:10

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60 April passed by on a bad note. Nepal (and several parts of India) was shaken. Quite literally. Nepal relief is a long story. One of the most devastating earthquakes in 60 years had razed most of Nepal's tourist attractions including the Pashupatinath Temple and Dharahara. So much for technology. We drool over gadgets and talk of every new phone launch. But, probably technology needs to be appreciated for helping humans, and those in dire need. We've been able to **reach the the moon**, remotely control **rovers on Mars**, and dream to send a craft to the Sun. We even **landed on a comet!** But we struggle to save human lives when disaster strikes. Natural disasters bring with them chaos and despair. If technology can come to our rescue ever, it's during a natural calamity. To save lives of those who speak like us, feel emotions just like us, and in case of Nepal, even a nation that has sent people to guard us, at our borders!



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The NETRA v2 unmanned aerial vehicle in flight. Image: ideaForge

Now that the operation in Nepal has passed through its crucial phase of rescue, there now stands the larger responsibility of rehabilitation. But over the course of these weeks that have passed by, in addition to the stories of compassion and universal love, there's one story of rescue that originates in Mumbai.

It began with a start-up at IIT Bombay.

Close to 10 years ago, a bunch of friends at IIT Bombay were tinkering around with whatever they could set their hands on. Inquisitive IITians at work! One fine day, one of the guys thought of building a hovercraft to use over the Powai lake near the IIT Bombay campus. Yeah, **IITians never disappoint you** with their imagination and creativity. 31-year old Ankit

Mehta is the co-founder and CEO of ideaForge, a Navi Mumbai-based company that focuses on building compact, cost-effective and user friendly unmanned aerial vehicles (UAVs). These are popularly known as drones, ever since the war on terror was launched by the US to deal with terrorism in the Middle East and Persian Gulf region.

Mehta narrates how the thought of building hovercrafts turned to drones. He adds, "It is a very interesting story. I was two years senior to my co-founders Ashish Bhat and Rahul Singh. By the time they joined IIT Bombay, I was promoting an Innovation Cell wherein we encouraged students to come up with innovative ideas and tried to arrange funds from the institute towards their execution.

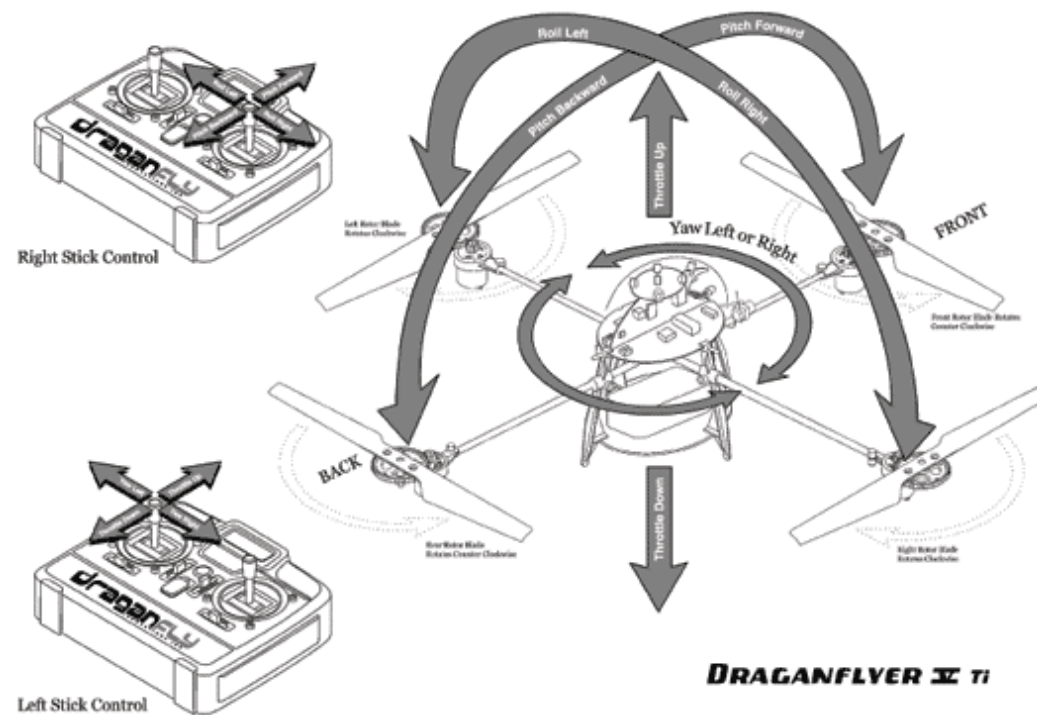
Both of them attended one of the Innovation Cell's sessions. Subsequently, Rahul approached me with the idea of making a hovercraft using engines from discarded bikes and scooters lying around IIT Bombay and flying it over the Powai Lake. I liked the idea and suggested that we should make a few scale models and then attempt the bigger crafts. We implemented a bunch of successful thermocol prototypes to test out the principles. It was really exciting to do the activity at that time."

A fun idea by a few students was about to turn into something bigger, and years later play a vital role in saving human lives!

Mehta adds, "We brainstormed from making bigger hovercrafts to small

helicopters. Several discussions later we realised that making helicopters was likely to be very difficult due to machining and cost considerations. We wanted to attempt something that we could actually prototype in a short time frame. So we sort of sat with the problem of making a small hovering aircraft for a while.

Eventually as it happens with technology, the solution came to us a few months later when we worked out the Quadrotor mechanism with counter rotating propellers. This sort of marked the beginning of our team's explorations in the small UAV space."



A simple quadrotor mechanism showing 4 rotors to balance the yaw, lift, pitch

and roll to stay afloat. Image: rctoys.com

From an unknown start-up to making a difference

After designing a few products while at IIT, Ankit Mehta and his co-founder and CTO, Ashish Bhat designed the first prototype. They imported some motors and arranged drivers, mixers and batteries in India. Most of the other structural components were hand built including the propeller hub. Mehta says, "We manually made the propellers out of carbon steel and also manually balanced the aluminium hubs. That proved to be the scariest experiment we had done so far and the first attempt to fly the quad resulted in an accident with the carbon steel propellers chopping the connection cables so badly that we were scared off our next attempt for almost 6 months."

We're glad the duo didn't stop there! As fate would have it, Ashish Bhat and Rahul Singh (also co-founder and CTO) made a tethered flying quad as part of an academic course they were taking together. Opportunity came knocking with IIT Bombay's Department of Aerospace granting them a project to build inertial data loggers for micro UAVs. That was something IIT Bombay was attempting to create.

An idea that came to life

One thing led to the other, and soon the association with IIT Bombay, led them to participate in a competition held jointly by the US Department of

Defense and the Indian Army. That was MAV 2008. They ended up sharing the first prize with MIT! That win in the competition highlighted their efforts, which was noticed by DRDO, which in turn requested them to share their technology to enable DRDO's UAV programs.



The ideaForge Team – (left to right) Rahul Singh, Ashish Bhat, Ankit Mehta and Vipul Joshi.

In 2009, Mehta and his team at ideaForge built what was then the world's smallest and lightest autopilot and delivered it to DRDO, integrating it with their UAV platforms to enable their first fully autonomous small UAV system.

DRDO invited them the same year for a technology exhibition in Pune, which led to an MOU with DRDO for the NETRA UAV. Mehta loves working with the forces. He adds, "It has been a positive experience working with DRDO, NDRF and other forces. We have been privileged to work with forward looking officials who have had the vision of inducting such advanced equipment. Our systems have been operational in the field giving our forces the anticipated results."

When tragedy struck

On 25th April 2015, the earth shook in Nepal. That's probably an understatement. Because the earthquake at 7.9 on the Richter scale has resulted in catastrophe in the Himalayan kingdom. Eyewitnesses have compared the ground movement to the way a carpet is dusted.



Unmanned aerial vehicles are the best way to access risky terrain, especially cracked buildings during an earthquake. Here rescue officials are inspecting a ramshackled building in the 2015 Nepal earthquake. Image: ideaForge



Blocked roads and crowded paths lead to a rescue nightmare. Drones provide an easy means to survey affected areas as seen in this drone footage. Image: ideaForge

“When we heard of the quake, we immediately knew that the National Disaster Relief Force (NDRF) is being rushed to help in the rescue operations. Since they are our clients we offered our full support as they had informed us of their plans to take NETRA UAV to Nepal for overlooking the operations. We ensured that we were always available for support if the UAV pilots so desired.”





In addition to the Nepal tragedy, the ideaForge team has also been a part of the Uttarakhand rescue operations in 2013, as well as the Beas river tragedy and the Pune landslide rescue operation in 2014.

The satisfaction of standing out

Mehta feels a sense of contentment at the efforts his team has made. We are currently the leaders in the small UAV space in India by a big margin due to our diligent and persistent efforts in making this technology reach our forces. We are keen on ensuring that we can do our bit in public, and our forces' safety.



According to Mehta, "ideaForge is one of the rare first generation startups in India that has developed a world class indigenous product in the hardware technology space. A lone fire in India holding its own against global UAV technology companies. We are not just buying components off the shelf and integrating, but are designing and developing almost all the components of an UAV system from first principles. We create products that compete with the best in the world while still being significantly lower in cost." He adds, "ideaForge was founded in 2007 by IIT Bombay graduates who believed they were privileged that the nation had invested so much in them, making them feel equal to any challenge. And we felt that if we had worked so hard in developing our ability to build technology, then it was our responsibility to give ourselves a chance to build products. We were always passionate about autonomous robotics

and alternative energy so that's what we picked for creating products."

The true purpose of technology

It is start-ups such as ideaForge, coupled with the persistence of individuals such as Ankit Mehta and his team that has resulted in products that have made a difference in the lives of families. Saved lives and brought relief and assurance to many unknowns. It is functions such as **Google Person Finder** and **Facebook Safety Check** that have brought about that sense of assurance across millions of users who've known loved ones and friends in disaster struck areas across the globe. We believe this is the true purpose of technology. To save lives. To improve lives. And to make a difference. Only then could we continue drooling on the finer aspects of technology.

If you know of compelling stories of the impact of technology in life, leave a comment below, or tweet to us [@tech2eets](#). You could also reach us on our Facebook page: [facebook.com/tech2dotcom](https://www.facebook.com/tech2dotcom).

Tags: Ankit Mehta, Ashish Bhat, DRDO, Drone, Facebook Safety Check, Google Person Finder, ideaforge, IIT Bombay, NDRF, Nepal Earthquake, NETRA v2, Rahul Singh, Vipul Joshi

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