

Research Journey -

Uday S Ghatge:

How does one describe the feeling of exhilaration! Indescribable were the range of emotions that I went through when I was awarded "The Excellence in Mechanical Engineering" in 2010 by the Institute of Engineers India, a highly prestigious award by a very reputed institute. Moreover, I was the youngest person to receive this award, since from 1980. As I stood on the dais, all the years of dedicated hard work played through my mind. Today, I only remember my life based on my research activities.

I strongly believe that one man can make a change. I would like to stay in scientific community and so I am.

I have been authoring my personal notebooks and have generated database from which I conduct research and allied developments.

I always keep on editing my notebooks (which are acting tools for my designs, developments, accidents, implementations and operations) with supportive role of the best minds and book authors, area in which I am working. I have my own design Laboratory setup. Today my inventions are global leaders in deployment technology (particularly in satellite boom deployment, mechanism and allied system designs). I run a personal tech forum. Today, at the age of 29, I have secured 35 National and 2 International patents under my name. I secured my first patent at the age of 21. I published one research article on HIV inhabitation. I have invented the BIO DIAGNOSTIC CAMERA to detect the blood ingredients with just one photo click of blood sample. Having a natural propensity towards continuous learning, I realized that I have a strong ability as well as liking for uncertain and long term research. Therefore, I aspire to pursue a M.S and PhD with the focus of delivering noble work to MIT Camera culture. I hereby describe my preparation and motivation to do graduate studies, and why camera culture is the best for me.

My two patents (in the field of electronics and software) and allied research work got me selected among the "Top 70 inventors of India" by Indian Institute of Management- Ahmedabad (World's 18th ranking Management Institute). Again, I was the youngest one to be selected amongst these this elite group of 70 inventors. I have been nurtured in R&D management experience by association with the department of "Center of Innovation Incubation and Entrepreneurship" of Govt. of India.

I invented the product KAKRIKA, the world's first on board data and file management system. Today KAKRIKA is an international product brand and published on more than 20,000+ design sites and forums. I led the KAKRIKA team at my lab and this product was developed with a base investment of hardly \$4000. I have started writing books on the field of advance electronics and software, more in the area of data transfer and assembly language algorithms. I secured 13 patents on the KAKRIKA technology.

I have put in a lot of work in the field of electron spin dynamics and its interactions with other materials. I have designed my own mathematical database of quantum dynamics which helps me to convert science into technology. I designed HIV mechanism (EMF- HIV inhibition), where I have tried to inhibit the RNA by electromagnetic spin action. My idea to neutralize the negative charge on RNA by dealing with its natural frequency gave me the solution of blocking HIV growth into cell.

I am the team leader of two software development projects named "Mouse House" and "Fingerwand", both of which are patented. The projects are currently under development and using these softwares, we can customize our touch.

Just after my graduation I got engaged with space developments - I developed and delivered the Satellite Boom Deployment Mechanism (conceived, designed, developed and patented by me) for SENSE spacecraft of Indian Space Research Organization (ISRO) and Indian Institute of Geomagnetism (IIG), both- Govt. space organizations, in 2 months 16 days (Govt. allocated duration was - 3.5 years) (AR - Autonomous research)

I also developed and delivered the spring operated Satellite Boom Deployment Mechanism (conceived, designed, developed and patented by me) in 5 month 3 days (Govt. allocated duration was - 4 years). (AR)

And lastly I developed and delivered the Balloon Boom Deployment Mechanism for National Balloon Facility (designed, developed and patented by me) (Govt. project) (AR)

I also delivered the LAB model to the Govt. space agencies and am now in the process of developing the flight models.

This has resulted in making India independent, more particularly into the area of satellite boom deployment.

During my school life I worked in the field of with superconductivity - I always excelled throughout my school days. The trigger point of my research was my idea of generating black light (a bulb which produces darkness during day time, so that objects become invisible) at the age of 6, I was in grade 1 at the time. In the 8th standard I started working on Coulomb's law. After two years, I realized that some of my basics were not clear, and realized that an assumption works only when you know the core of the matter. I came in a close association with advance integration mathematics. Later, between 2000 and 2008, I handled conductive pallets that involved experimental accidents and concern solutions over it. In those days, I studied superconductivity that helped me understand the depth of material research. Concentric superconductivity locks the forces and even respective flux around it and with this, if you launch a flux generated superconductive pallet with a particular speed, it may form a lift, with cosine angle with the radius of curvature of the earth. I would like to introduce this research in my balloon propulsion. I have designed one pallet system below -270° centigrade on my equation $E = (\text{Suva}) \times (f^2)$. 'Suva' means the factor (1/200 - space factor, invented by me and 'f' stands for electromagnetic frequency). We can either deal factor from 1/1 in space. I discovered that some forces having direction, not only associate with gravity of the earth, but also with other gravity forces. I have been trying to prove that, the force requires magnitude, direction and external gravity. I connected this with Lagrange's points. We can manufacture some systems on earth where such forces exist below -270° centigrade and above certain (unknown) temperature. I am the inventor of this force system where time is exponential with respect to temperature. Currently, I am in the process of writing a book on it. I require some experiments to bring it to a conclusion. I found no books written on this said topic, where I have registered one international patent on the said system. This is my dream work in propulsion system.

I registered my first company during my last year of graduation, 2007. The very next year, we registered Brain Chamber Technologies Pvt. Ltd, which was co-founded by my mother, a good mathematician. Today, I own and manage four private limited companies with a total net worth of \$3.54 million. The company has the best advisory board members with a strong research and academic background; some of them are directors in Govt. Space agencies.

Today my company is under the certification of Department of Science and Industrial Research Organization (**DSIR**). This is the top most certification in India, only accredited to the best research companies and institutions. Government has approved series A round grant of \$98,000 from Council of Scientific and Industrial Research **CSIR** (Govt. organization) to my company to carry out research on Satellite Deployment Mechanisms for Govt. of India. We are among the world leaders in Satellite Boom Deployment Mechanism. Under company norms, I have guided research based projects and remained as a principal investigator to 12 students (graduate and post graduate).

I have designed SUVA-UDAY balloon principle (invented and patented by me) to levitate balloon. It works completely different from normal hot air and gas balloon principles. We have worked with National Balloon Facility (NBF), a Govt. space balloon research facility.

During my under graduation, I filed 4 patents (2 granted), formed a R&D team, won many national competitions, established working relationships with renowned laboratories and registered one company Brain Chamber R&D private limited. 'Working model of Hovercraft' was my academic project.

Today under public service sector, I have designed and patented the SUVA-UDAY Education Project to propagate education from grass root level. This project is conducted under the aegis of the SUVA foundation, formed by me and my family. This project is being implemented in schools and institutes with the motive of national social activity.

I have started a new venture named Brain Chamber Polymers Pvt. Ltd; established for polypropylene manufacturing. We have plant capacity of 5tone/day. We have raised funds from private equity. The expected annual turnover of this venture is around 4 million USD.

All my achievements so far would not have been possible without the support of my family, mentors, teachers, colleagues and friends. I am in process of developing my thought process to make every research successful. Every action is important for me.