



Artificial Intelligence is the perhaps the hottest phrase going around the world – not just among high technology persons but among all. Today, in India, almost all NBA accredited colleges have a program in AI or AI and DS or CS and AI (some permutation or combination of AI and DS). How did this come about? Here IITH faculty can take a lot of pride – because it all started with IITH taking the lead.

It was some time in late 2018 when some email exchanges started about what role should IITH play in AI. It was motivated by strong academic program activity in AI at Carnegie Mellon University and then at MIT. In fact, the proclamation by MIT that it will invest a billion dollars to create a new college focusing on AI, Machine Learning and Data Science

(<https://www.technologyreview.com/2018/10/15/139781/mit-has-just-announced-a-1-billion-plan-to-create-a-new-college-for-ai/>),

created a lot of buzz at IITH. At that time, the then Director started having informal consultation with faculty members, in CSE and EE, who were doing some work in AI or AI-related research. The overall opinion on starting a program was positive though several concerns were well articulated. IITH had the advantage of starting an online Executive M.Tech. in Data Science (2015) for working professional, and M.Tech. in Machine Learning (2017). Because of this, three big advantages were on IITH's side: (i) Confidence in starting new innovative programs in cutting edge areas, (ii) faculty strength in DS and ML (though not adequate but enough to make an impact), and (iii) most importantly, a spirit of leadership and courage.

Many meetings ensued since the early informal discussions with faculty on starting a B.Tech. in AI. Each meeting was productive, and each meeting had heated discussions. Passions were high on both sides. It was this passion among the faculty, leadership of the faculty, the courage of the faculty, and of course, the confidence among the faculty that they will deliver world-class education in AI, that eventually led the decision to start a B.Tech. in AI at IITH in August 2019. This was the first of its kind, possibly in the world.

Next in line was the debate on who will run this program; will it be under the CSE Dept., will it be under the EE Dept., will it be jointly run by CSE and EE. Here, IITH had set an innovative precedence. Some years ago, IITH started the first of its kind in India, a B.Tech. in the Engineering Science program.

This program was run by a virtual Department of Engineering Science. What does one mean by a virtual department – a department wherein we do not hire any faculty and the department consists of faculty members from all other departments. There was no imposition, it was left to the faculty whether he/she wanted to be associated with Dept. of Engineering Science. Well, the response was overwhelming both from faculty and students. Dept. of Engineering Science started attracting very high JEE(A) rankers, at one time it was the number three department with respect to the option exercised by JEE(A) rankers. It will have to be another article if one has to do justice to the innovations within the Department of Engineering Science, but one can visit <https://es.iith.ac.in/studentsexperience.html>

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It was decided to have the Department of AI as a virtual department. Another reason for having a virtual department was that today, there are no graduates who have core expertise in AI; they are fundamentally CSE or EE graduates with a Ph.D. thesis in AI. Thus, it is best if these faculty are judged by the standards set by the departments where they have the core expertise (for e.g. CSE or EE) and if found suitable, hired by the core department. They then, of course, can be associated with the Department of AI. The philosophy being that this should continue until one starts having graduates with core expertise in AI. Once the Senate approved the decision for starting B.Tech. in AI and forming a virtual department, faculty from different departments came forward to join the program. Of course, bulk of the faculty were from CSE and EE. Please visit <https://ai.iith.ac.in/index.html>.

Good things started happening as soon as the B.Tech. in AI was established. It was the second most sought after department (after CSE) by JEE(A) rankers, and this in the very first year of offering B.Tech. in AI – the opening rank was 478 and the closing rank was 657. Other institutes and colleges started thinking of a B.Tech. program in AI or AI and DS. Some, with help from IITH started B.Tech. in AI or B.Tech. in AI & DS in 2019 itself. By 2020, almost all institutes of national importance started some program with some permutation or combination of AI and DS. Soon after the B.Tech. in AI was launched by IITH in 2019, AICTE discussed starting such programs in all NBA accredited colleges in the country. Very quickly a positive decision was taken by AICTE to allow B.Tech. in AI and DS in all NBA accredited colleges. IIT Hyderabad can take pride in starting a wave, for programs in AI and/or DS across the country. Today, IITH offers a full bouquet of programs in AI at the

undergraduate and postgraduate level, as well as a minor in AI. Research in all aspects of AI, not just computer vision, is pursued by many faculty and students across departments. In fact, it may not be an exaggeration to say that today, IITH has the best programs in AI and also the best faculty in AI; a small proof of the pudding: Nvidia decided to start India's first NVAITC (Nvidia AI Technology Center) to accelerate research in AI and its commercial adoption at IITH.

Let me end by making a few remarks on starting an innovative program. The key components of starting an innovative new program are:

- (i) The process is both top-down and bottom-up simultaneously, a contrarian approach,
- (ii) Assessment of the need – a slow process requiring a lot of study, a lot of scanning of the global horizon, a small team needs to do this,
- (iii) Consultative – bringing the faculty on board, this is a process that is slow, requires a lot of patience, requires a lot of time from the Director and the faculty, innumerable hours are spent by faculty and the Director in both formal and informal discussions. Perhaps, a lot more is achieved during informal discussions,
- (iv) Having the courage that the program may or may not succeed. If success is the prime criteria, then nothing innovative will be achieved. In any innovative endeavor, one must be prepared for failure.