

Academic Research in India

Industry-Academia Interaction

-Mohit Garg

There has been a lot of discussion on the standards of technical academic research in the country and the fact that we do not have sufficient Ph.Ds coming out of colleges to propel the country into the next level of technical growth or maybe even sustain the current growth levels. Several reasons have been cited and discussed. I would focus on one major reason, which in my opinion, has led to low standards of research in even the best of the institutions in the country.

Most research that I have seen during my college days (at least in my area of research -- communications and signal processing) had been driven by problems defined/seen in research papers published in international journals/conferences. While technical language is the same across the world and the efforts being put to try and solve these problems in our institutions is high, there is a fundamental lack of understanding of these problems simply because we have never seen these systems work practically.

In my example, I was working on a wireless algorithm for base stations and I had never seen a base station in my life! When I raised this issue, it was belittled and disagreed upon. My point of contention is that engineering research is not just about solving mathematical problems and simulations. It is an iterative process involving three steps:

1. System modeling
2. Solving the mathematical problem and simulating
3. Applying the solution to the practical problem and verifying the solution.

Now, we are very good at the (2) but since we do not have a feel of the real system, we are not good at (1) and have no means of verifying the solution in most cases (3).

There could be two reasons for this:

1. Lack of any Indian technology companies involved in R&D activities.
2. Not looking at the right problems which are available around us.

Both of these are probably true. While (2) is another problem that the research institutions are dealing with (lack of research interest in local problems and developing local solutions), I want to bring forth (1) as an important reason for the falling research standards in the country.

Engineering research always thrives through an ecosystem involving both the academia and the industry. India has excellent academic institutions and some exceptional people in them. However, the lack of local R&D companies means a lack of good, real problems to work on which leads to people taking up problems from international journals and solving them without a fundamental lack of understanding. This is not only discouraging for good people to join these institutions, it also creates a

hollow among graduates of these colleges since they have not worked on any real-life problems and solved them completely.

We need better Indian industry in the technology domain and we need them to interact closer with the academia.

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