Internship opens students’ eyes!

Ten engineering and computer science students from the highly acclaimed Indian Institute of Technology (IITD) in Delhi spent 10-weeks at The University of Nottingham as part of their internship.

All ten students stayed in University Halls of Residence and studied alongside Nottingham students to work on a variety of research projects.

As well as providing a unique opportunity to sample life as a Nottingham student, the internship programme also included plenty of time to sample British culture.

A full events programme was organised by the University and included trips to London and the Peak District, attending cricket and tennis matches as well as the offer of an Indian feast laid on by a local Indian restaurant!

As Kalpesh Singal summarised “We had a great time and I’d love to have the opportunity again!”

Photo. Students enjoy a trip to London and see the sights from the London Eye.

Aditya impresses the judges

At the end of their final week, the students were asked to present their research projects to a panel of experts as part of a competition. The panel included the Dean of the Faculty of Engineering, Prof Chris Rudd.

“Engineers require many skills” said Prof Rudd, “whilst technical understanding and problem solving are the obvious key skills, engineers often find themselves having to present their findings in order to get support from others. This exercise not only gives the students the opportunity to practice these skills but it provides us with a chance to evaluate their projects.”

Considering this was the first time many of the students had given presentations, all the judges were extremely impressed by the high standards of delivery and technical knowledge.

Aditya gave an extremely convincing and well-presented argument which meant he walked away with the top cash prize. However as an extra bonus, all students were awarded full scholarships for PhD research at The University of Nottingham.

“I really hope we will see many of these students returning to Nottingham to continue their research, they are a credit to the IITD” added Prof Rudd.

Aditya Bhatla
Supervisor: Dr Barrie Hayes-Gill
School of Electrical and Electronic Engineering
New anti-roll bar for Formula Student Racing Car

As a member of the IITD formula student team, Devesh was really excited to learn that he could work on the Nottingham formula student racing car. His project was to design and manufacture the car’s anti-roll bar.

The anti-roll bar is an important component of the suspension of a car. It is used to add stiffness to the suspension in order to prevent the lifting of the inside tires while cornering.

The project involved calculating the dimensions, design, the modeling and finally manufacturing the anti-roll bar. Devesh’s efforts obviously paid off. There was a significant improvement of the handling of the car and the team improved their position by 16 places on last year’s results—ending in 22nd place.

Checkmate!

Jivitej Chadha (pictured left, top) and Sachin Jindal (left, bottom) worked in the School of Computer Science, on a joint project to programme a computer chess player that played at the same skill level as the average human player.

Both students began by refreshing their knowledge of some of the trickier strategies of chess eg Castling and En-Passant and the various moves for

Check. With this knowledge they developed a computer chess player using a variety of search techniques including, MiniMax Algorithm and Alpha Beta pruning.

Result

The pair succeeded in making a chess player which worked efficiently up to a search depth of four and could cope with the special moves. However, as Jivitej added, the programme would require more work “I intend to work on the project at IITD since it still has a lot of scope for improvement”. Sachin agreed, “I need to optimise the computer player more with better evaluation function and better search optimisations”.

Opportunity to travel

It was the opportunity to travel and visit a foreign land that really attracted Maniraj to an internship. But he enjoyed his project so much and had such good results that he’s hoping to continue his project back in Delhi and publish a paper.

Maniraj was looking at how to optimize the radiation field in a monolith reactor by positioning the lamps to give the best radiation distribution and photon efficiency in order to achieve the best conversion in the photoreactor. Such information is highly valuable when designing reactors used for the decontamination of air.

“This was something new for me, I learned a lot and will be taking back much more” said Maniraj.

Supervisor: Dr Li Puma
School of Chemical Engineering
What the Students’ say...

“Nottingham is a great place!”

Abhiroop worked on a project within the Rolls-Royce Manufacturing Centre involving the miniaturization of machine tools. For Abhiroop, it was the opportunity for hands-on individual project work that made the internship exciting.

“In Delhi we work in teams and there is a lot more reading. Having the facilities is one thing but being able to work at your own pace and convenience is another.”

Asked if he had any advice for students considering an internship he added:

“Nottingham is a great place so chill and enjoy. The internship was well planned with no time for boredom.”

Abhiroop Jayanthi
Supervisor: Dr Dragos Axinte
School of Mechanical, Materials and Manufacturing Engineering

“A rare opportunity so make the most of it”

Ferrocement is a form of reinforced concrete using closely spaced multiple layers of mesh or small rods encapsulated in mortar. Divya’s project focused specifically on the mechanical properties of ferrocement.

Originally from Rajasthan, Divya was always interested in science and mathematics but was keen to look at the application of science. Engineering seemed to be the ideal option.

When the possibility of an internship came up she jumped at the opportunity.

One of things that has impressed her most was the opportunity to get involved in the labs on the practical side, “In India the work is much more lecture based with the technicians doing much of the ‘hands-on’ work and the students watching”.

Asked if she would recommend internships to other students Divya replied “yes, definitely. Make the most of it, it’s a rare opportunity and if you get here interact with everyone for the best experience”. A highlight of the internship was the opportunity to mix with students from around the world.

Divya’s project was awarded second place in the end-of-placement competition.

Divya Jain
Supervisor: Prof Carlo Sansour
School of Civil Engineering

Lab experience second to none

Ekansh successful produced a simulation of his project which investigated the control of the transient and the steady state characteristics of the Induction Motor using indirect vector control techniques.

“The Internship provided some great lab experience working on new and sophisticated equipment” Ekansh was also surprised at the informal and friendly attitude of academics and the fact that you could talk to them about things beyond your study... like cricket. “The culture within the Indian education system does not encourage this kind of relationship”.

His advice to anyone taking up an internship would be to “get your passport and visa sorted early”.

Ekansh Aggarwal
Supervisor: Dr Mark Sumner
School of Electrical & Electronic Engineering

“Nottingham is a beautiful City and The University a beautiful campus”
By offering internships, The University of Nottingham is able to raise its profile overseas and be seen at the forefront of education and research. As more skilled and talented students emerge, it is important for The University to continue to offer excellent educational opportunities and to make links with other quality international institutions who offer internships.

In building good relationships and offering successful internships, collaborative research projects are much more likely to succeed and the sharing of information benefits both institutions.

The value of internships is certainly two-way and by working together two highly regarded institutions can achieve a great deal.

Interns are provided with a valuable experience which will enable them to develop specific skills and knowledge, boost confidence and to establish contacts which may well help them in future years. This experience often sets them apart from their peers.

On a cultural level, a more accurate understanding of the UK is achieved which may encourage them to return to study here in the future. The University of Nottingham values this possibility and is keen to develop reciprocal schemes for its own students to visit some of the institutions it works with.

The International Office plays a key role in the planning and review of internships, and provides advice on visa's and finance for students. Any organisation interested in finding out more about internships should contact the International Office directly.

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**New culture and new lifestyle**

While both Kalpesh and Shiv worked on completely separate projects, both agreed that the highlight of the programme was the opportunity to work with students from around the world and to experience a new culture. “We are used to a more theoretical approach to learning in Delhi, with more formal relationships between the academic and student” said Kalpesh.

**Kalpesh Singal**

**Project:** Study of elastic-plastic & creep behaviour of notched bars

**Supervisor:** Prof Tom Hyde


**Shiv Kumar Chawla**

**Project:** Organization of magnetic nanoparticles suspended in organic solvents on silicon substrates

**Supervisor:** Prof Philip Moriarty