Department of Computing

Industrial Liaison Board

Thursday 30th May 2019
5.00pm (refreshments available from 4.30pm)
Ballroom, 58 Princes Gate
South Kensington Campus
London SW7 2PG

Imperial College London

Minutes

Attendees

External:	Alexandros Papspyridis (Microsoft), Allister Furey (Entrepreneur First), Pinar Emirdag (State Street), Raymond Mulligan (Barclays), James Rice (Travel Fusion) Andrew Ferrier (IBM), Andy Cheadle (McLaren), Anna Shipman (Financial Times), David Sharp (Ocado)
Internal:	Daniel Rueckert (Head of Department), Will Knottenbelt (Director of Industrial Liaison), Anandha Gopalan (Deputy Director of Industrial Liaison), Alessio Lomuscio (Director of Strategy and Planning), Tony Field (Director of Studies: UG), Fariba Sadri (Director of Studies: PG), Anne O'Neill (Department Operations Manager), Tom Curtin (Industrial Liaison Officer), Ed Johns (Lecturer), Jackie Bell (Senior Teaching Fellow)
Apologies:	Peter Pietzuch (Director of Research), Julie McCann (Professor of Computer Systems), Robert Chatley (Principal Teaching Fellow), Holly Cummins (IBM), Francesca Toni (Deputy Head of Department), Bryan Lillie (Capgemini), Sarah Wilkinson (NHS Digital)

Agenda items

1. **Welcome and introduction by Daniel Rueckert (Head of Department)**

   Daniel thanked everyone for coming and all attendees made introductions.

2. **Membership and terms of reference**

   Daniel indicated that the terms of reference and the minutes from last year's meeting were included in the pack provided to all attendees. He asked that if there were any comments to please email them through after the meeting.

3. **Minutes of the last meeting**

   Please see item two.

4. **Departmental update by Daniel Rueckert**

   Daniel highlighted the "new faces" in the department, including Michael Bronstein (expert in deep learning), Antione Cully (working in robotics), Ed Johns (also working in robotics), Lucia Specia (Prof of natural language processing) Francesco Belardinelli (working in logic based

A.I), Nicolas Wu (programming languages), Soteris Demetriou (Cyber security), Daphne Tuncer (research fellow working on computer systems). In addition, we have a few staff have taken a part time role in the department as they have joined industry. Allister Donaldson has founded a spinout called Graphics Fuzz, very quickly acquired by Google. A great success story for us as it's being used in all Android phones to check for bugs, so a huge impact, but only working 20% in the department, so demonstrates how the academic work we do has real world impact.

We have approval for a new MSc conversion degree in artificial intelligence starting October, we are limited by space, but we are increasing teaching labs to eventually accommodate over more 100 students. We have a large number of training programmes for PhDs that have been funded by the government which include AI. CDTs will train 80 PhD students per year across the College. There is a substantial opportunity to engage with industry in this via co funding PhD students, with a mixture if UKAI and industry funded.

Our student population is growing in terms of applications but we only have room for 200. We have more than 15 applications per place – this causes strain on the department to handle this but also we cannot offer all students who meet the entry requirements a place. Our MSc numbers leave us in a similar situation; we had 3300 applications for 200 student places.

DeepMind have generously donated to the department to cover an MSc scholarship programme, which covers tuition fees and a bursary to increase our representation of underrepresented groups: BAME, women and WP. There is also opportunities for companies to take part in something similar.

We are increasing our teaching space to increase the total amount of UG and MSc by 100 students. A huge amount of space currently occupied by computer hardware servers on the 2nd floor, which is currently being relocated to Slough into a data centre.

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5.   **Research presentation by Dr Ed Johns**

Dr Ed Jones gave a presentation on his research in Machine Learning and Robotics.

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6.   **Project proposal for MSc AI & replacing an MSc Individual Project with an industrial placement - Dr Fariba Sadri**

MSc for AI has been launched as a conversion for 1st class STEM graduates. Part of the degree programme includes one group project and one individual project, we would like to make sure the projects are realistic and as exciting for the students as possible, so we are looking for industry to bring us proposals and ideas for realistic applications or any ideas you want tested and experimented in. Fariba invited the board members to consider the invitation for involvement in group projects, please send an email to Fariba at f.sadri@imperial.ac.uk. The process would be to advertise the proposals amongst our colleagues to find a supervisor, and then we advertise to students. Projects are entered onto the database by September, Group projects have 4.5 months, in parallel with their other studies, for the individual projects they have 5 months dedicated, so could be more substantial.

David Sharp asked if the students need to be based at Imperial. Fariba replied ideally they should be based at South Kensington, but as part of the project they could spend some time at the company, however NDA issues need to be discussed. Daniel commented the group project would be very difficult to not be based at South Ken due to other class commitments. Fariba says they could perhaps to a few hours on a Wednesday afternoon.

Allister Furey noted that in his experience long lead times between the company setting what needs to be done and the interaction with the student at the university leads to projects falling short as the company generally needs someone to begin work "yesterday". Therefore non tightly defined projects work better via student flexibility. Fariba said the group projects needs

to be tightly defined as they coincide with other courses but the individual project can be open ended with a 'safe base' of work. Better to find ideas that students and the company have the luxury of exploring, rather than a piece of work that has a strict outcome.

Point 2
We are being encouraged to explore a variant of this degree where the individual project is replaced wholly or partly by an industrial placement. This would be quite an experiment for us. It would need some thinking, some planning to assess the placement accurately as part of the degree. Fariba wants to explore with The Board if they are interested offering this type of internship. How attractive is this type of degree to an employer? These students would not have done an MSc project.

David Sharp said placements would be exciting from company's point of view, as it gets round the IP discussion. Assessing it would be challenging. Fariba said we would need some form of academic monitoring. David also pointed out that if the placements are jointly supervised, the academic would need to be payed to avoid the IP problems. David said the College needs to rethink their approach to IP.

Fariba wanted to make clear that these are two degrees so the terms and conditions are set out in advance, so students know what they are enrolling on.

Anna Shipman pointed out that you may perpetuate inequality, as student who would prefer to be paid for placement due to not have much money would give up their IP, whilst a student who can afford to may take the project and retain the IP, benefiting in the long run.

Raymond said that there would be definitely be interest from industry for the placement variant. Andy agreed that industry would take placement students, particularity in AI as the data sets are usually guarded, so if you are handing data over to a student via a project it be a problem. Raymond said if a student is on a placement, the data sets they have access to would be 'great'.

Will pointed out there needs to be some careful over the assessment of the placement, David agreed and says that is why the academic needs to be involved, and would have to pay for the academic's time.

David pointed out that the difficulty lies with central College, Daniel said Imperial Innovations no longer exists and there is much change in this area. The new academic lead is Prof Peter Cawley; former HOD of Mechanical Engineering, Daniel agreed to put David in touch with Prof Cawley and Dr Simon Hepworth. Daniel pointed out that this would be new, therefore would take much effort to 'push through' and only worth doing if there is considerably interest from Industry.

7. **Industrial Placements: Streamlining the recruitment process - Dr Anandha Gopalan - Open discussion**

    Anandha pointed out that student load is key area for improvement for teaching activities. We have seen that a large load is the time students take to look for a placement. Students are spending 60 to 70 hours per term looking.

    Anandha said we are thinking of using a business school method of assessment and interviews week, with hopefully 50% of students have placements sorted at the end of the week. Anandha wants the board to discuss with their companies to figure out the roadblocks.

    Pinar pointed out that this model works well in USA business schools.

    Andy pointed out that job searching in the 3rd year is beneficial as its gets it out of the way and what you may do is just transfer the load to the 4th year.

David outlined the Ocado method of a full day of integration. Tony said that the Ocado method of seams excessive, if a student applies to 10 companies that would be a lot of time and stress spent of looking for what is only a 6-month placement.

Further comments can be sent to a.gopalan@imperial.ac.uk

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8.   **Industry presentation: Allister Furey from Entrepreneur First**

Allister gave a presentation on Entrepreneur First's activities. Notably two PhD graduates from Imperial met on the EF programme, their start-up Magic Pony was subsequently acquitted by Twitter for $150m.

EF are also in talks with the Enterprise Lab Team at Imperial to partner and support activities at Imperial. Allister says it is an exciting time for people who want to build companies, as there is a lot of funding available.

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9.   **Equality, Diversity, Outreach and Public Engagement - Dr Jackie Bell**

Jackie gave a presentation on Equality, Diversity, Outreach and Public Engagement DoC.

Our well-established positions within society provide each one of us with an exceptional opportunity to bring about positive change. Together we can speed up gender parity and equity across the sector, adopting inclusive practices to further diversify our workforce.

As a world-leading and fast-growing department, Imperial Computing welcome equitable partnerships with industry partners such as yourselves to support the growth and development of our ED&I initiatives. Our computing outreach activities continue to be in high demand and it would be fantastic to have you on board to financially support the growth of these highly engaging educational programmes for children, families and members of the public.

If you would like to continue the conversation around partnership programmes to support the growth of diversity and/or outreach activity across our combined organisations, please contact Dr Jackie Bell (Jaclyn.bell@imperial.ac.uk) on +44 (0) 207 594 5472.

Daniel welcomes any ideas for engagement and partnerships from industry.

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10. **Pathways for deeper and more strategic engagement with Industry - Prof Alessio Lomuscio - Open discussion**

As a department we keep scanning for things to be improved, that involves revisiting what we do. Clearly, the corporate partnerships we are doing is working quite well, but we must ask if we are collectively happy with the relationships, we have.

In USA, there is one key difference in engagement: at research level, where it is more of a two way street. There are a lot more theoretic research events where companies can hear from Universities on what is happening at PhD and post doc level, but crucially there is a lot of talking between the companies themselves, Alessio say he was told serval times there is value in these sort of events. Perhaps we are not facilitating enough of this.
Generally, Alessio believes we should pursue a 'fuller' level of engagement with Industry, longer-term strategic opportunities not restricted to UG, but also MSc and PhDs.

David said that in principle there could be some form of a 'club' of companies and academics in a particular area, who may want to 'club together' some funding, then the research output is

synopsised, with pre-agreed rules on what would be done with the out-put. This is in principle possible, but it's not possible at the moment, due to a 'narrow minded centre'

Andy commented that a Consortium could create a structured mechanism by which could address current challenges faced by the technology industry and address the strategic engagement pathways raised by Alessio. McLaren are members of a consortium, which is funded by government and works really well.

11. **AOB**
None.

12. **Close**
Daniel thanked everyone for attending and welcomed feedback on any of the items discussed.