Industrially Sponsored University CS/ECE Research: Some Recommendations Regarding Intellectual Property Agreements

J Strother Moore
Department of Computer Sciences
University of Texas at Austin

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Disclaimer

The opinions about to be presented are those of J Moore, and do not necessarily reflect those of Gabby Silberman (my co-chair), IBM (Gabby's employer), the CRA, or the University of Texas at Austin.

The IP Goldmine

institution	license income (x1000)	research expenditures (x1000)	income as percentage of expenditures
Columbia	89,160	279,276	31.9
University of California system	74,133	1,864,901	4.0
Florida State University	57,313	132,665	43.2
Yale	40,696	315,953	12.9
University of Washington	27,879	479,665	5.8
Stanford	27,699	417,037	6.6
Michigan State University	23,712	207,912	11.4
University of Florida	21,650	280,408	7.7
University of Wisconsin-Madison	18,011	421,600	4.3
MIT	16,131	725,600	2.2

Figure 1: top university license income (MIT TR Sep, 01)

The Top Earning Technologies

At Columbia in 1995, the top 5 earners among the licenses generated 94% of the income and 91% of the income generated by these top 5 was attributed to biomedical licenses.

In the UC system in 1995, 66% of all license income was generated by the top 5 licenses: 100% of that income was biomedical.

More recent UC data, from 2001, indicate that the top 25 licenses generated 77% of the income and that none were CS/ECE inventions.

At Stanford in 1995, the top 5 licenses generated 85% of the income and 97% of that income was biomedical.

“The growth of patenting and licensing by U.S. universites: an assessment of the effects of the Bayh-DOle act of 1980”, Mowery, Nelson, Sampat, Ziedonis, *Research Policy* (30) 2001.

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Figure 2: top university license income

Revenue Is Only Part of the Story

UC system license revenue: \$73M

- legal expenses

- operating expenses

- distributions to joint holders

- other expenses

net: \$5.2M.

UC OTL Annual Report 2001

Why CS IP Is Different

- time-to-market is critical in the computing industry, so lengthy license negotiation can kill the utility of an idea;

- most consumer products involve the combined use of hundreds, if not thousands, of patented ideas; and

- CS/ECE IP protection is relatively easy to skirt and is therefore difficult and expensive to protect.

"Typical" software patent infringement suit

- costs \$1 – \$3 million
- lasts 31 months

University v Industry Patenting

Universities account for less than 2% of the software patents issued in the United States.

During the 1990s university software patenting declined slightly.

Companies build interlocking patent portfolios containing thousands of patents.

In 1997, IBM obtained 1166 software patents.

"Intellectual Property Protection in the U.S. Software Industry," S. J. H. Graham and D. C.

Mowery, Haas School of Business, U.C. Berkeley, 2001.

Company IP portfolios are used both

- offensively
- defensively

Universities have no defensive use of patents: they have no product to defend.

Industrial Response to CS/ECE IP Barriers

Three other aspect of CS/ECE research bears noting here.

- The startup costs of a computing company or lab is small.
- Faculty consulting is necessary to maintain currency in CS/ECE research.
- Graduate students can earn much more in industry as interns than as TAs or RAs.

Industrial Response to CS/ECE IP Barriers

Set up off-campus research facilities.

Hire CS faculty as consultants.

Hire grad students as interns.

Own all the IP.

University share: 0.

The Importance of Sponsored Research

institution	SRA income	license income as a percentage of total SRA income
CMU	167,675,342	2.8
MIT	725,600,000	1.7
Stanford	417,037,000	6.2
UC system	1,864,901,000	3.7

Figure 3: License Income as a Percentage of SRA Income

When one recalls the relatively low proportion of license income attributable to CS/ECE, the importance of sponsored research funding is even more apparent. SRA income is absolutely crucial to university research and especially to CS research.

Industrially sponsored research is of particular importance to computer science because

- we need industry data, and
- it is through industry that we have impact.

  Metropolitan areas that have academic institutions performing large amounts of R&D, particularly R&D that is funded by industry, are more able to attract and grow technology companies. *Metropolitan New Economy Index, New Economy Project*

Further Supporting Evidence

According to the Director of the UC Berkeley OTL, UC Berkeley has never issued a license to IBM, HP, or Intel [private communication].

A similar statement holds for Stanford, according to the Director of the Stanford OTL [private communication].

Stanford's Epic Program

Combines into a single portfolio all of the IP generated by the CS/ECE/EE faculty.

For a fixed annual dues, a company may join the "club" and be permitted, for another fixed fee, to purchase a non-exclusive royalty-free license on any patent in the portfolio.

Companies not in the "club" must negotiate for such licenses.

See http://availtech.stanford.edu/Scripts/otl.cgi/epicsummary.

UC Pilot Program

Exempts CS/EE IP from the usual UC rules. Gives contracting officers great leeway in negotiation license agreements.

The expectation is that companies exploiting UC Berkeley IP will repay with gifts and fund raising campaigns (e.g., for buildings and chairs).

Counterproductive Behavior

Widespread patenting and restrictive licensing terms may in some cases hamper, rather than promote, technology transfer from universities to industry.

These policies may also obstruct the process of scientific research.

An administrative emphasis on patenting and licensing may interfere with the operation of other effective channels through which university inventions reach commercial applications.

Recommendation: The university should grant the industrial sponsor a free, non-exclusive, non-transferable, royalty-free license for internal research purposes to all patented CS/ECE IP generated by university personnel working under an SRA. Furthermore, for a fixed annual fee in the vicinity of $1,000, the university should grant a non-exclusive, non-transferable, world-wide, royalty-free license without the right to sublicense (in a designed field of use, where appropriate) for the sponsor to make or have made products exploiting the IP.

Recommendation: For companies other than the sponsor, I suggest that similar licenses be available for a fixed but somewhat higher fee.

Recommendation: OSPs and OTLs should recognize the unusual nature of CS/ECE IP.

Recommendation: OSPs and OTLs should work together to negotiate industrial contracts.

Comments and Thanks

Send your comments to

- moore@cs.utexas.edu
- gabby@us.ibm.com

I appreciate the great research by Jay Vegso of the CRA.