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REVENGE OF THE NERDS

PART 1 OF 3

Engineers Have Never Had it Better

This study examines an extremely topical issue today: how the rise of the engineer is impacting the American workforce. Over the last ten years, the demand for engineering talent has grown dramatically; as a result, the salaries of engineers have increased rapidly, and the unemployment rate among them has remained low compared to national averages. What we're calling the 'Revenge of the Nerds' has broad-reaching implications in the American economy, so we wanted to put some numbers behind the trend.

So what did we do? We delved into our database of over 50 million professionals to assess the reasons for and impact of the 'Revenge of the Nerds' by examining questions like:

- * How much more in-demand are engineers than professionals with a liberal arts background? Does that change over time, or based on their work experience?
- * Why are engineers so sought-after in today's economy?
- * Who are the most in-demand engineers? What schools are they graduating from? Where are they living and working?
- * Are engineers more likely to start companies than non-engineers?



WHO IS IDENTIFIED?

Identified is the largest database of professional information on Facebook. Identified's database includes over 50 million Facebook users and over 1.2 billion datapoints on professionals' work history, education and demographic data. We've assembled a world class team of 15 engineers and data scientists to analyze this vast database and identify interesting trends, patterns and correlations — all to empower people to make the best professional decisions possible.

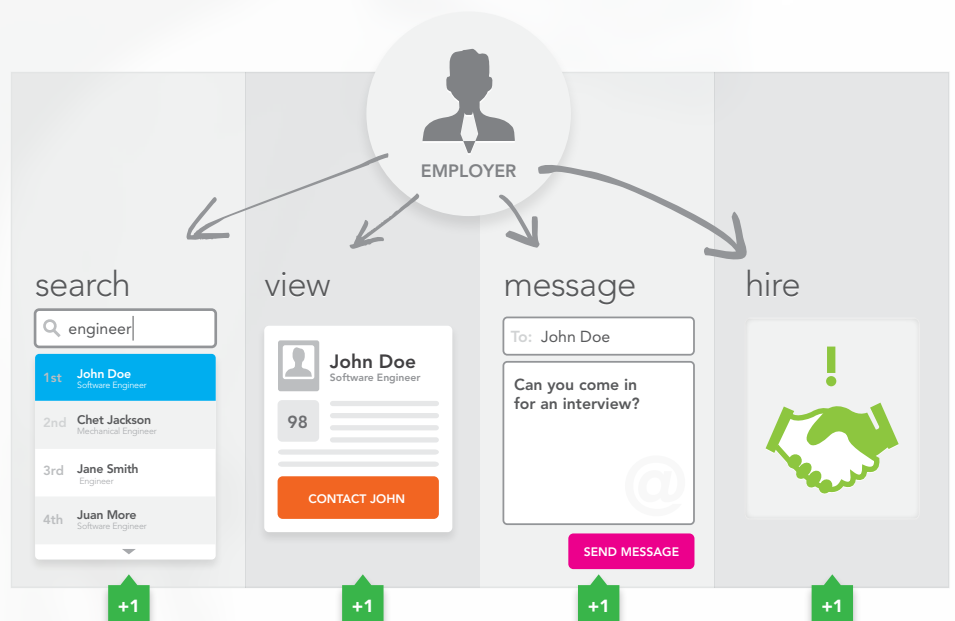
The idea behind Identified is to make the labor market more transparent by opening a channel of communication between companies and professionals that has never previously existed. Users can understand how in-demand they are to employers in real-time through their score. They can also view demographic information on companies and their employees that cannot be found anywhere else. Employers use Identified to more easily access the talent that best fits with their needs.

WHAT IS THE IDENTIFIED SCORE?

Our team pioneered the creation of the Identified Score, the first standardized metric to tell professionals how in-demand their professional background is to companies right now on a scale of 1 – 100. Identified tracks the recruiting behaviors of over 10,000 companies, monitoring who they are searching for, who they are in contact with and who they hire. Based on who these companies search for, view, contact and hire, our dynamic algorithms assign each professional an Identified Score, recalculated five times daily to ensure the most precise measurement. The Identified Score has rapidly been adopted as the new standard of professional relevance by HR departments, recruiting and staffing firms, and professionals alike. Two million professionals have visited Identified, and 12 million Identified Scores have been viewed.

Methodology: From our 50 million professional profiles, we divided college graduates with engineering-related degrees ('Engineers') from some of the most popular arts and social science degrees including psychology, communications and business ('liberal arts'). Next, we analyzed the jobs that these Engineers pursued post-graduation, distinguishing between 'Technical Fields' (engineer, scientist, etc.) and 'Non Technical Fields' (everything else). Then, we analyzed how the Identified Scores trended based on years of work experience for three categories of professionals: Engineers in Technical Fields, Engineers in Non-Technical Fields, and liberal arts majors.

ANATOMY OF THE IDENTIFIED SCORE

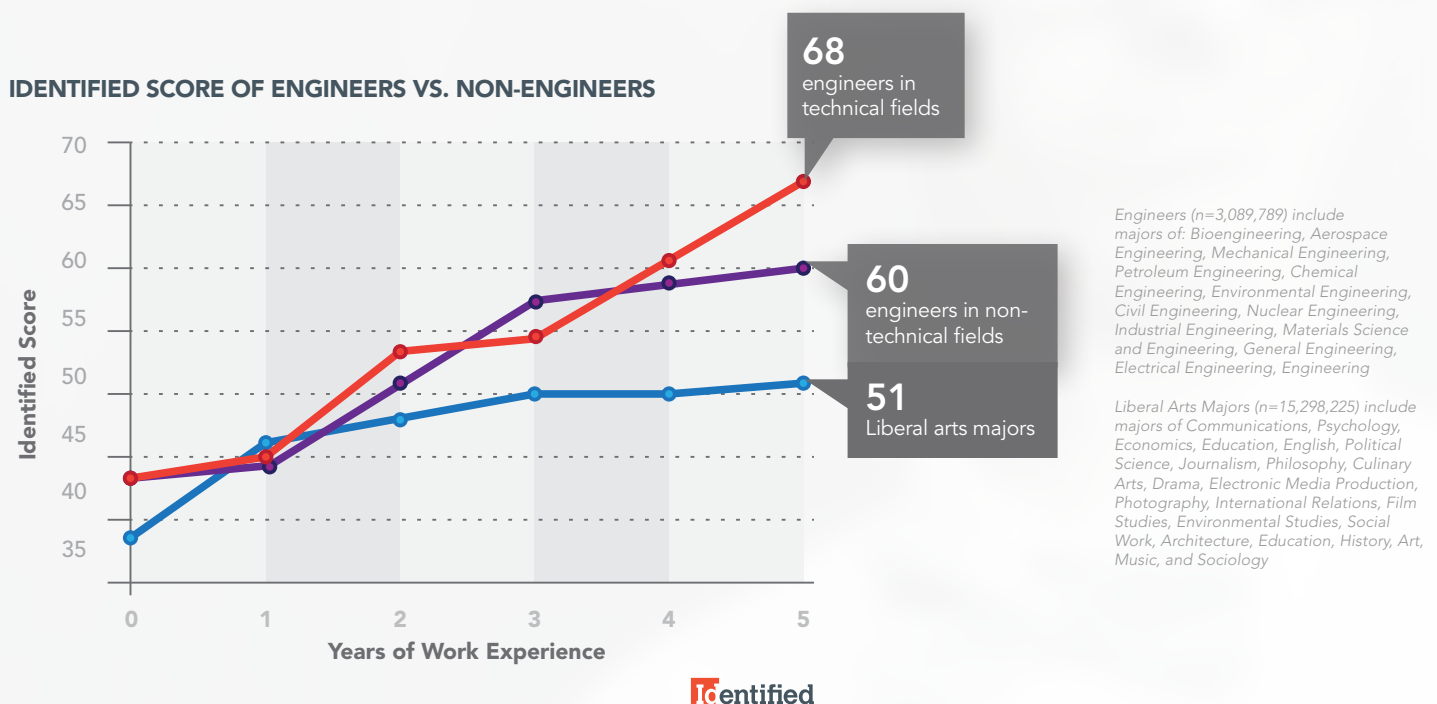


PART 1: ENGINEERS ARE AT THE TOP OF THE FOOD CHAIN

Engineering majors are far more in-demand than their liberal arts equivalents

We were not surprised to learn that engineers are more in-demand than liberal arts majors right now. On average, engineers had Identified Scores that were nearly 1.2x the Identified Scores of liberal arts majors with equivalent years of work experience, and engineers are searched for, viewed, contacted and hired 23 percent more often. Looking deeper at the data, however, the conclusions start to get more interesting:

- * Even in non-technical fields, engineers are more in-demand than their liberal arts equivalents with the same amount of work experience
- * The more work experience they have, the more in-demand engineers are relative to their liberal arts equivalents



So why are engineering majors so much more in-demand than other majors? To begin to answer that question, we looked at some basic labor supply and demand economics from publicly available data. The U.S. Bureau of Labor Statistics (BLS) projects that U.S. companies will create 178,000 engineering jobs from 2008 to 2018 (the last projection made), a growth of over 11 percent.¹ In fact, the BLS publishes a list of the “Fastest Growing Occupations” and, sure enough, the list is packed with engineering specialties that are expected to grow dramatically from 2008 to 2018, including Biomedical Engineers (72% increase), Software Engineers (32% increase) and Environmental Engineers (16% increase).² The reasons for this growth are manifold: the growth of giant technology companies like Google, Apple, and Oracle, the startup boom and the number of new technology companies being launched, the increased automation and mechanization of traditional brick-and-mortar businesses, and many more reasons. Ultimately, the U.S. economy has developed a strong appetite for engineers and it doesn’t appear it will be satisfied any time soon.

¹ Occupational Outlook Handbook, 2010-11 Edition, Engineers [<http://www.bls.gov/oco/ocos027.htm>]

² Employment Projections, Fastest growing occupations [http://www.bls.gov/emp/ep_table_103.htm]

Despite the increased demand, the number of engineers being produced in the U.S. has barely grown in recent years. Engineering programs at four-year institutions have marginally expanded and certainly have not kept pace with the demand for their graduates. The Digest of Education Statistics show that the number of graduates from engineering programs in the U.S. rose by 4,893 from 2003 to 2008, an increase of only six percent.³ Top engineering programs like MIT, CalTech, and Stanford have only marginally increased their class sizes: collectively 9,416 engineers enrolled in those programs in 2006 and today that number has only increased to 10,101. Clearly, the number of engineers entering the workforce hasn't been able to keep pace with the demand for them and it seems unlikely that U.S. engineering programs will be able to expand in order to fulfill the demand for 17,800 new engineering jobs the BLS estimates will be created each year. As the demand for engineers increases, we expect that their Identified Scores will continue to rise as companies spend more time & resources finding engineering talent.

Much has been written about this so-called 'engineering shortage' and in June, President Obama announced a major initiative for the private sector to train 10,000 new engineers annually. In his address, Obama said, "The world is shifting to an innovation economy and nobody does innovation better than America...If we want an economy built to last, we need more of those young people in science and engineering." Many states have taken this engineering shortage into their own hands; this year, Kansas created its own 'University Engineering Initiative Act', a bold plan to increase the number of state engineering graduates by over 50 percent with strong public financing.

RANKINGS OF US COMPANIES WITH FOREIGN-EDUCATED ENGINEERS

RANK	BY TOTAL NUMBER OF ENGINEERS	BY % OF TOTAL COMPANY
1 st	Microsoft	NVIDIA
2 nd	Google	Sun Microsystems
3 rd	IBM	AMD
4 th	Accenture	Amazon.com
5 th	Cisco Systems	Oracle
6 th	Amazon.com	EA
7 th	Oracle	Adobe Systems
9 th	Hewlett-Packard	Yahoo!
8 th	Yahoo!	Intel
10 th	Facebook	Symantec
11 th	Sun Microsystems	Microsoft
12 th	Motorola	Qualcomm
13 th	Intel	Google
14 th	Texas Instruments	Facebook
15 th	NVIDIA	Thomson Reuters
16 th	Intel Corporation	Texas Instruments
17 th	Qualcomm	IBM
18 th	Symantec	Honeywell
19 th	Apple Inc.	Motorola
20 th	Honeywell	Hewlett-Packard

Foreign-educated engineers in our database: n=24,372.
 Limited analysis to companies where n>100.

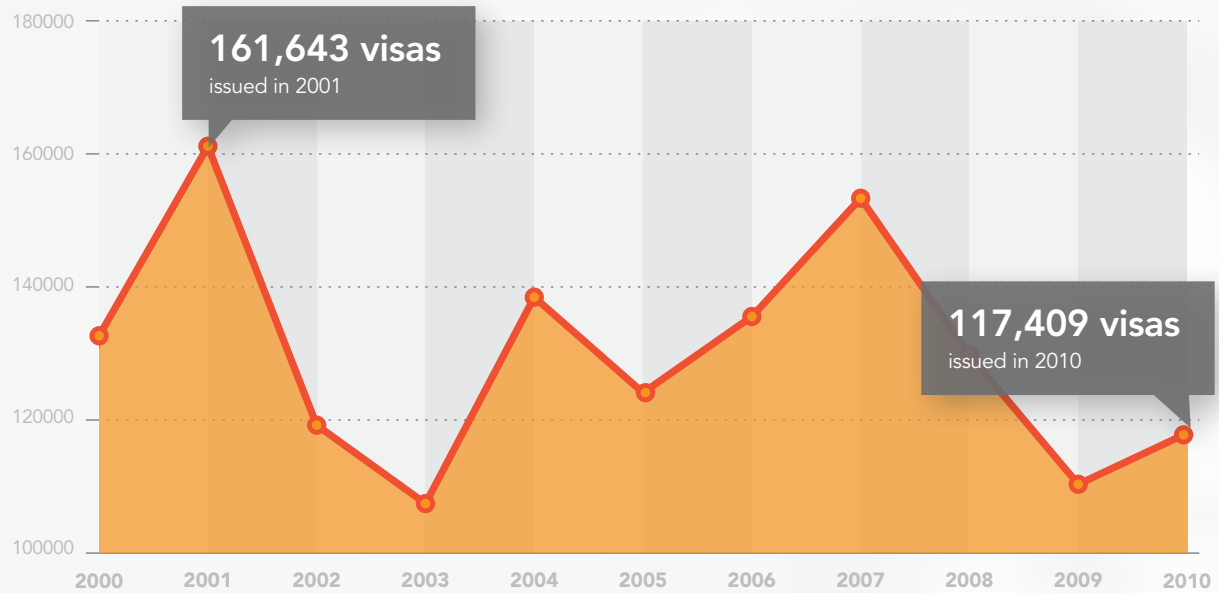


Public proclamations aside, how will the U.S. fill the demand for these engineering jobs? Could internationally-trained engineers bridge the gap? The H-1B visa is designed to do just that: it enables U.S. employers to employ foreign workers in so-called 'specialty occupations', including engineering. The number of H-1B visas issued by the State Department grew steadily during the 1990s and peaked in 2001 with 161,643 H-1B visas issued. Many of these H-1B visas are intended for engineers, and were issued to technology workers, as a quick look at the top twenty U.S. companies sponsoring such visas shows.

Despite the increase in demand, immigration and visa policies implemented by the Bush administration curbed the number of available H-1B Visas; in 2009, only 110,347 such visas were issued, a decline of over 30 percent. These stringent policies appear even worse in light of the fact that nearly 40 percent of U.S. master's degree and 60 percent of doctoral candidates in engineering are foreign-born. Post graduation, however, only 70 percent of these graduates reside in the U.S. for more than 10 years, due in large part to visa and immigration limitations. In other words, not only are we limiting the number of foreign-born engineers who might be able to help satisfy engineering demand, but U.S. educational institutions are filling their already limited programs with foreign students who are often compelled to leave the country after graduating.

³ The Digest of Education, Degrees in engineering and engineering technologies conferred by degree-granting institutions, by level of degree and sex of student: Selected years, 1949-50 through 2008-09 http://nces.ed.gov/programs/digest/d10/tables/dt10_316.asp

ENGINEERS IN THE WORKFORCE ON H1-B VISAS

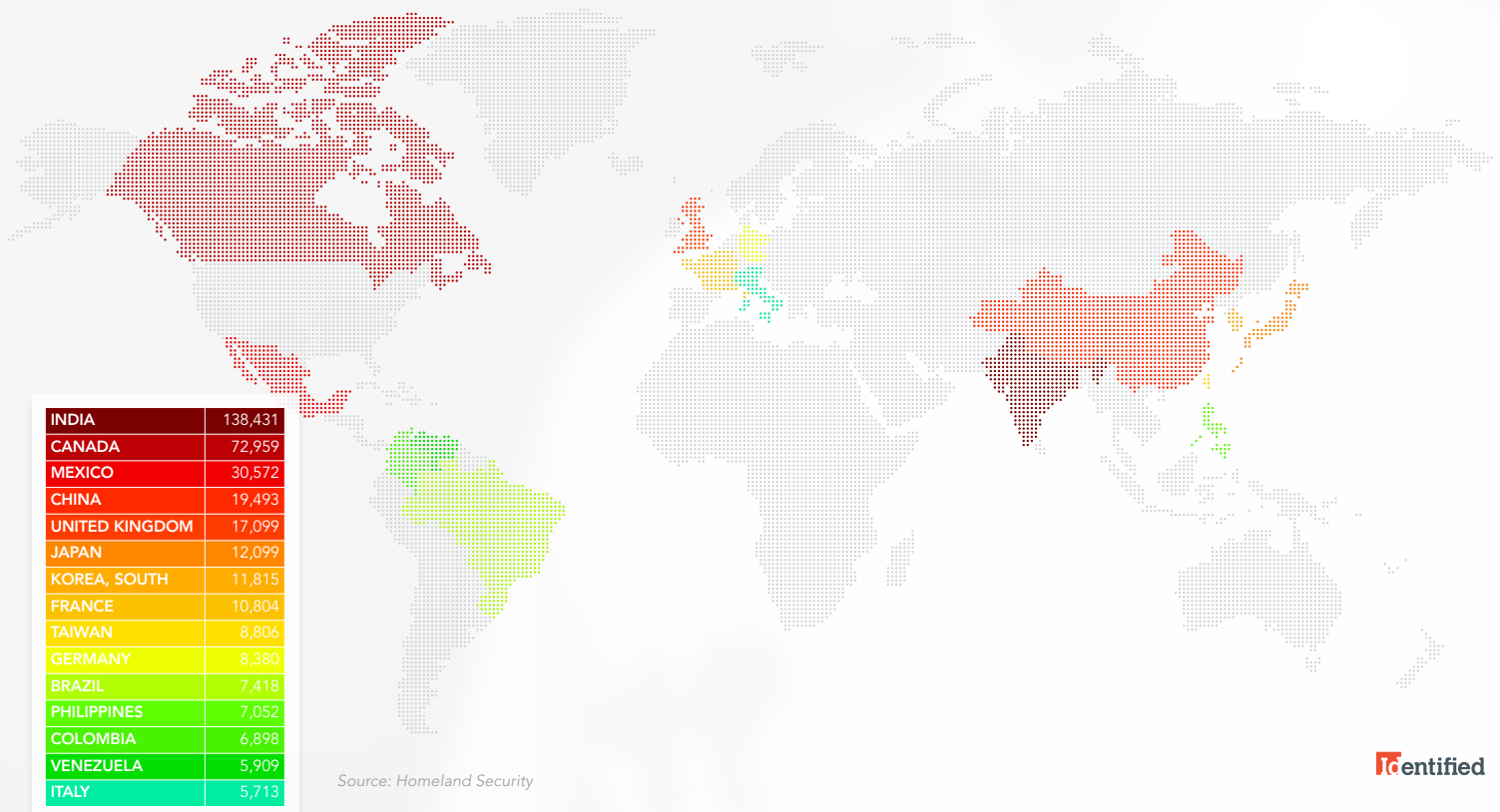


Source: Wikipedia, H-1B visa [\[http://en.wikipedia.org/wiki/H-1B_visa\]](http://en.wikipedia.org/wiki/H-1B_visa)



The impacts of engineering under-supply and over-demand are obvious: according to the U.S. Labor Department, the unemployment rate for engineers is 4.5 percent, nearly half the national rate of 8.6 percent⁴, and average engineer salaries in current job postings are 23 percent higher than average salaries for all job postings nationwide at \$89,000⁵.

H-1B VISAS BY COUNTRY - 2010



Source: Homeland Security



⁴ Computer World UK, Obama makes push to train more US engineers [\[http://www.computerworlduk.com/news/careers/3286130/obama-makes-push-to-train-more-us-engineers/\]](http://www.computerworlduk.com/news/careers/3286130/obama-makes-push-to-train-more-us-engineers/)

⁵ Indeed.com [\[http://www.indeed.com/salary?q1=engineers&l1=&tm=1\]](http://www.indeed.com/salary?q1=engineers&l1=&tm=1)

“We’ve made incredible progress on education, helping students finance their college educations, but we still don’t have enough engineers”

– President Obama

CONCLUSION

The U.S. is in a real engineering crunch. The demand for engineers in the American economy is outstripping the supply of qualified engineers both domestically and abroad. This is reflected in the high Identified Scores of engineers and further validated by their high salaries and low unemployment rates relative to non-engineers. The future looks bright for American engineers.

COMING NEXT

In Part II and Part III of ‘Revenge of the Nerds,’ we will look more closely at the typical career path of an engineer.