

# Testimony of The American Engineering Association

August 5, 1999

Hearings Before the  
Subcommittee on Immigration and Claims  
Of the Judiciary Committee

U.S. House of Representatives

H-1b Visa Expansion

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## **Introduction**

The American Engineering Association is a national, non-profit organization with members from virtually all disciplines of engineers, scientists, computer programmers and related occupations.

We are a professional organization as distinguished from a technical society. The dues and donations of individual members support AEA. The American Engineering Association does not accept corporate memberships and receives no federal funds. All AEA officials are volunteers.

AEA is concerned with the erosion of our nation's technological leadership. We believe this loss is largely due to legal immigration, which gives preference to foreign workers, and to misguided trade policies. We do not believe the American taxpayer should subsidize these activities.

## Position

**The American Engineering Association opposes any increase in the H-1b or any visa category under which foreign technical workers may be imported.**

Many of these same companies asking for increased access to foreign labor have had massive layoffs in the past year. They have "surplussed" many of their employees. There is a concerted effort by our captains of industry to drive salaries down to make the quarterly bottom line look good.

By definition, any person not working in their profession is part of a surplus of workers in that field; therefore, if the field has unemployment there cannot be a shortage. It is not possible to have both a surplus and a shortage within a profession at the same time.

The Information Technology industry would have you believe they are the only "high tech" industry and the only users of H-1b's. The truth is that many other industries use who would be eligible under the H-1b visa. Perhaps most notable among these are aerospace and defense, both of which have been disaster areas during this entire decade.

The facts are there has been some 13 million technical degrees granted during the last four decades, yet only about a fourth of that number are currently working in their chosen profession. Shortage?

## Retraining

The ITAA spoke of the millions of dollars their members spent on retraining in the previous year, yet it amounted to less than \$100 per employee per year and much of that amount was spent on non-technical training.

Retraining programs, generally speaking, have been disastrous from the engineer's perspective. After spending thousands of dollars and many hours of study, companies refuse to hire unless the person has specific experience, yet they are unable to get the experience without the training.

Retraining is a scam perpetrated on the engineer and the public to extract tax dollars as a quid pro quo for the academics support of immigration legislation.

**The only acceptable retraining program is "OJT" or "On The Job Training" with the costs born by the company doing the retraining.** If they have an investment in the person, they are much more inclined to continue to employ that person.

## Recommendations

It is very clear, especially to the practitioner, there is no shortage of engineers, scientists, computer programmers or any technical profession. There never has been a shortage other than a temporary spot shortage in a relatively small geographical area.

**The recommendation of the American Engineering Association therefore is "Shut the hearings down and don't do anything." (Unless of course, you might want to reduce the numbers.)**

## Testimony

I have to question why these hearings are being held. Industry received nearly everything they wanted last year. Michigan Republican **Spencer Abraham**, chief Senate sponsor of the legislation, said it **“gives our high-technology companies the tools they need to compete in world markets.....”** (EE Times 10/19/98) If they already have the tools, why do they need more?

Corporate America constantly pushes the envelope of legality and morality in its day to day business dealings. They carry this general philosophy into the arena of immigration legislation. The truth of this statement is born out by the "studies" and "reports" produced by various industry groups and governmental entities under the influence of industry.

## American Electronics Association

Typical of the predictions of engineer shortages were perhaps the most widely quoted "source" of the early 1980's, a survey by the American Electronics Association. Members of Congress, the National Science Foundation, the national media as well as the major trade journals quoted this survey.

Only after several years of quoting their survey did AEA **admit their survey only indicated a "shortage of electronic engineers" and should not have implied a "shortage of all engineers". In early 1986 Pat Hill Hubbard of AEA finally admitted, "the electrical engineering shortage no longer exists".**

Ms. Hubbard described an article in the AEA publication "Update" which still maintained there were a shortage of engineers as an **"unfortunate editorial misrepresentation"** and a problem of **"semantics"**.

## National Science Foundation

The NSF report which brought about these hearings **"Future Scarcities of Scientists and Engineers: Problems and Solutions"** as I understand it was never "officially" released and presumably was never an "official" position of NSF.

This report was quoted extensively in Rep. Morison's immigration hearings and in fact was the basis for nearly tripling the number of foreign engineers and scientists who potentially are to be admitted to the United States.

In April of 1992, the National Science Foundation's unofficial, bootleg study was discredited in a Congressional hearing both because of its poor methodology; lack of peer review and the unusual distribution method used to get it to the media, but also because the shortages projected failed to materialize. (It was often described as the NSF's "underground literature." Statement of Chairman Howard Wolpe, House Science, Space & Technology Investigations and Oversight Subcommittee, April 8, 1992.)

From the very beginning, labor economists and statisticians, including those inside the Foundation, scoffed at the methodology as seriously flawed ... However, the study,

through its repeated use in speeches and testimony by the Foundation's director, university administrators, members of Congress, and countless articles and news stories, took on a life of its own that was slowed only when the engineering community publicly attacked it...(ibid)

**What was NSF's answer to the criticism? They indicated they had never said there was a "shortage" of engineers; they defined it as a "shortfall".** My dictionary (Webster's II, New Riverside University Dictionary) defines shortfall as follows: "1. A failure to attain a specified amount or level: SHORTAGE. 2. The amount by which a supply falls short of expectation, need or demand." To an unemployed engineer any difference seems inconsequential.

In late March of 1992 the CNN financial show "**Money Line**" quoted the AEA report suggesting we are facing a crisis level shortage of engineers by the year 2010 or so. **Less than a week later Money Line also ran a story about the difficult time that years crop of college graduates were having finding a job. One of the professions spotlighted as having the toughest time finding work was engineering.**

## **Information Technology Association of America And the Department of Commerce**

ITAA issued a report which indicated a shortage of IT workers, which was at best interesting fiction. The Department of Commerce issued their own report parroting the ITAA report. The Government Accounting Office was asked to critique the DOC report with the following results.

After reviewing a September 1997 Commerce Department report on the shortage of information technology workers, the GAO concluded that the study **``has serious analytical and methodological weaknesses that undermine the credibility of its conclusion that a shortage of IT workers exists."**

The GAO study also criticized a 1997 survey by the Information Technology Association of America that reported 190,000 unfilled IT jobs in 1996. **With only a 14 percent response rate in its random survey, ITAA did not have enough basis ``for any generations about the population being surveyed,"** the GAO study stated. **A later ITAA survey, reporting 346,000 unfilled IT positions, had a response rate of 36 percent. For any sound generalizations, the response rate should be at least 75 percent, the GAO said.**

Again, Congress responded by nearly doubling the numbers of H-1b workers, but not without controversy.

We have heard in the two ITAA surveys, that at least some **US based multinationals responded with all of their worldwide vacancies**, so the survey vacancy rate was significantly inflated.

Who are the players this year who are providing reports and studies supporting the H-1b increase? To no one's surprise, it is the American Electronics Association, the Information Technology Association of America along with a relative newcomer, the

Computer Research Association. Where is the National Science Foundation in all of this? They used taxpayer money to fund the CRA study.

At first blush, the CRA study does not appear to be much of an improvement over the ITAA and AEA studies of previous years. The National Science Foundation, though not providing their own study has no doubt influenced the CRA study as to the final outcome.

Should we base public policy on the new AEA study given their track record when it comes to being up front and truthful in their studies? I know I wouldn't.

The Information Technology Association of America study is the same garbage only stirred and reformatted and is just as disingenuous. There is no reason to believe it is any more credible than the previous studies.

It should be noted that the American Electronics Association and the Information Technology Association of America memberships are largely transnational corporations. In many cases they are the same corporations. Transnational meaning "transcending national borders" and I might add, owing allegiance to none.

### **National Science Foundation Revisited**

The May 12, 1986 issue of Electronic Engineering Times carried a story which makes the following statements: **"A high-ranking National Science Foundation official (Mr. Nam Suh) told engineering vice presidents here last week that America engineers are overpaid and less productive than their foreign counterparts."**

The article goes on to **state "When pressed later to clarify his remark, Suh said bluntly "Yes, I think American engineers are overpaid."** " Mr. Suh was the assistant director for engineering at NSF at the time.

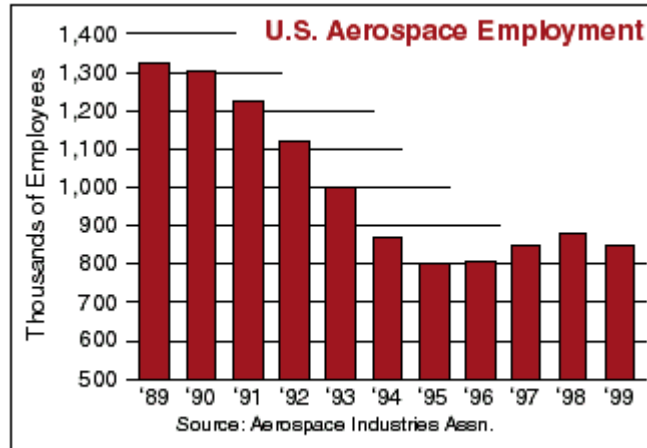
The article continues **"In his speech,.....Suh said there is a shortage of engineers, a contention with which few engineering groups concur."** **"He told EE Times afterward. "We need to improve the quality of them and the number of them."** I believe the term "them" is very telling of the attitude of not just Mr. Suh, but the NSF. Engineers are not a "them" or a product to be bought, sold or traded.

### **U. S. Aerospace**

As Congress is certainly aware the aerospace industry has been decimated by reductions in defense expenditures, mergers and buyouts as well as the world economic conditions. At the present time, there are only two major military aircraft companies, Boeing and Lockheed/Martin. **Both are still laying off.** All others have been relegated to subcontractor status or eliminated.

These conditions have eliminated many thousands of technical positions and may cost the United States its world leadership in aircraft design and manufacturing. As you can see from the chart below, the industry is only about half the size it was in 1990. The layoffs continue.

The June 21, 1999 Aviation Week and Space Technology has three excellent articles dealing with the aerospace industry which are available on their website. (<http://www.aviationweek.com/aviation/aw63-66.htm>) The Following chart was published in one of these articles.



### High Technology Recruitment Index

The Deutsch, Shea and Evans High Technology Recruitment Index (HTRI) graphically represent the instability of the engineering profession. The HTRI is a national indicator of technical manpower demand and based on a monthly count of recruitment ads directed to four-year or more degreed engineers and scientists. They maintained the Index for 30 years from 1960 to 1990. While the index is no longer being maintained, it is useful because of the time span it covers and the general trends in engineering employment/unemployment.

The following article from the American Engineering Association newsletter, the American Engineer gives a fairly brief explanation of the DS&E data and the importance of it

### Manpower Fluctuations Give Engineers Grief

The Deutsch, Shea and Evans High Technology Recruitment Index (HTRI) graphically represent the instability of the engineering profession. Every engineer or person considering engineering as a career should be familiar with this index and the dramatic fluctuations in the demand for engineers.

The HTRI is a national indicator of technical manpower demand and based on a monthly count of recruitment ads directed to four-year or more degreed engineers and scientists. D, S & E is a national recruitment-advertising agency that has been conducting research on employment, recruiting and other aspects of human resources since 1950. They have maintained the Index for 30 years.

We have included two additional reference lines and the associated comments from studies by Robert Rivers. Rivers is a Fellow of the Institute of Electrical and Electronics Engineers, a past member of their Board of Directors and a member of IEEE's

Manpower committee. Rivers is also the chairman of the Manpower committee of the American Engineering Association, Inc. and publishes his own "Engineering Manpower Newsletter."

Comments by Rivers highlight the periods of economic insecurity (unemployment) whenever the Index is below the 130-reference line. The curve also shows periods when our young engineering graduates were not able to find engineering jobs because the demand was depressed. Many were never able to enter the profession for which they studied so hard.

**The curve shows less than 16% of the 30-year period from 1960 to 1990 when there was room for new engineers without displacing older engineers or a manpower balance. The rest of the 30 years or 84% of the time, there was room for new engineers only if older engineers were displaced or a surplus prevailed.**

**Twenty five percent (25%) of the time there was no room for new engineers and older engineers were still being displaced or a large surplus existed. The manpower unbalance is derived from reduced demand, recruiting foreign students by the U.S. engineering schools, excessive degree production and the importation of foreign engineers.**

The excessive supply has been produced by congress dumping money into the colleges for engineering degree production and the passage of Bills that increase immigration for high tech people. This has been and is promoted by Engineer Shortage Propaganda (ESP), erroneous mathematical models that only show manpower shortages and biased reports. Short peak demand periods cannot be used exclusively in measuring manpower needs.

One must consider career employment over a 40-year lifetime. Maintaining an excessive manpower surplus is expensive, wasteful and detrimental to the profession and U.S. engineering capabilities. Maintaining a surplus with imported engineers has a severe and detrimental effect on job opportunities that provide skill enhancement for members of the U.S. engineering community.

There are good reasons for addressing the issue of fluctuating engineering manpower demand. First, this affects the lives and careers of all engineers, recent graduates and students that may choose engineering as their field of study. Second, this indicates that the engineer shortage reports were false and the shortage shouters were wrong. Third, this indicates budgets can be shifted from producing a surplus of engineers to maintaining a fully utilized and productive engineering community and creating a manpower balance.

The D, S & E, Index sheds light on the employment situation. Unemployed engineers and engineering graduates that cannot find engineering jobs may find some comfort in the assurance that they are unemployed for reasons beyond their control. They are facing these difficulties, not because they are bad engineers or poor students, but because there is a drastic manpower surplus created through deception by members of the U.S. government and the college empire.

Richard F. Tax, V.P. American Engineering Association, Inc



## PC Week Online

# I've looked at life from both sides now

By Brian D. Jaffe

March 8, 1999 9:00 AM ET

About a year ago, I said here that the touted IT labor shortage was an illusion. That's what my experience as a hiring manager told me--I was on the receiving end of an endless stream of cold calls from headhunters with bodies to place.

Late last year, however, I was laid off. Now, I've seen the job market from the other side of the résumé. And my conclusion is the same.

I still think there's plenty of IT labor out there. But there is a certain kind of labor shortage. It's not about the size of the IT labor pie, though. Instead, it's a reflection of the fact that there are so many ways to slice that pie, that hiring managers may only be left with a crumb after they carve out their needs.

For example, a database administrator is not simply a DBA. There are different database products--Oracle and Informix, for example. Each has several versions in widespread use and different versions of those offerings for different technology platforms and operating systems. If you prefer a DBA who has experience with other key technologies in your environment, your options are further reduced.

Perhaps you want specific project experience, say, building a data warehouse. Throw in other parameters such as environment size, industry, years of experience, communication or supervisory skills, certification, and salary range, and the grains of sand quickly slip through your fingers.

The complexities of IT, combined with reasonable search parameters, limit who can be hired. But since hiring managers get no sympathy for taking the time to find the right person, blame must be placed somewhere. The "labor shortage" is a ready scapegoat.

I was told by a headhunter of an insurance company that is looking for a project manager who knows Microsoft Project. Now, it would be difficult to find a reasonably experienced project manager who wasn't familiar with Project. Yet the recruiter told me that résumés had to list Project to be considered. Is there a project manager who couldn't learn the fundamentals of Project by spending a few hours with it before the interview? Would candidates be questioned on their project or Project experience? Perhaps the employer can't distinguish between the two.

Then there is the systems integration company that requires candidates to sign a two-and-a-half-page contract before interviewing with anyone outside of human resources. Curious, I thought, especially after I read the terms of the contract. I'd think twice before using this company for my projects, since I'd question the judgment of those who agreed to their terms.

Meanwhile, recruiters complain that résumés and inquiries overwhelm them after they run an ad. Candidates complain that recruiters often don't return their calls. According to news sources, 1998 was a record year for corporate layoffs--yet the economy is quite healthy.

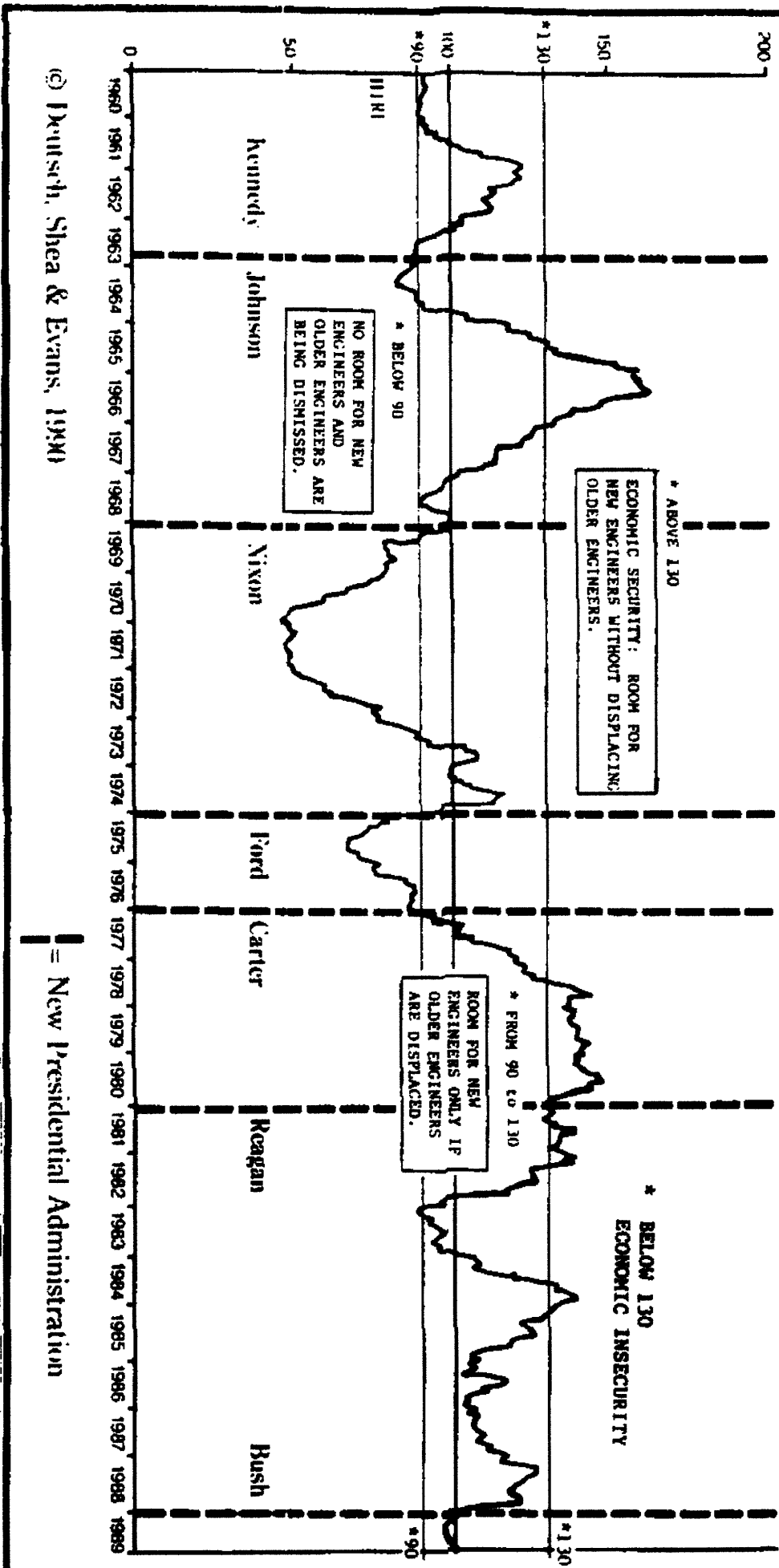
Maybe the perception of a labor shortage is just the employers' fear that if everyone is changing partners so quickly, they won't have anyone to dance with.

I'm still trying to figure out why a well-known entertainment giant seemed unable to fill a help desk manager's position that offered a salary in the low six figures. Go figure. But labor shortage? Nah.

Do you agree that the labor shortage is just one of life's illusions? Brian D. Jaffe is an IT director in New York. He can be contacted at [bdjaffe@compuserve.com](mailto:bdjaffe@compuserve.com).

# Deutsch, Shea & Evans High Technology Recruitment Index

(Seasonally Adjusted; Base: 1961 = 100)



\* NOTES FROM ANALYSIS BY ROBERT RIVERS, 1975

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— = New Presidential Administration

# American Engineering Association Manpower Bulletin

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Engineering and Information Technology Manpower utilization in the United States is in a state of flux. Overall engineering unemployment was 2.2% (49,000) in the first quarter of 1999. Employment was at a historic high level of 2,124,000, up 5,000 from the last quarter of 1998. Last year, the unemployment level was between 1.6 and 1.7% leaving the present higher level as an indicator of the easing of demand. There was a time when 3.2% unemployment was a crisis level (1971-72). Full employment for engineers was about 0.6% in 1965.

The BLS collects data on 13 subspecialties of engineering. Those are; Aerospace, Metallurgy, Mining, Petroleum, Chemical, Nuclear, Civil, Agricultural, Electrical-Electronic-Computer, Industrial, Mechanical, Marine and Not Elsewhere Classified. Of these, Electrical etc. is the largest subspecialty with a current 692,000 count. Engineers account for only 1.6% of workers in the current population survey conducted monthly and aggregated for quarterly data. The survey population is between 50,000 and 60,000 resulting in approximately 960 engineer responses per monthly survey at the most. That results in good data in the aggregate but for smaller specialties such as Mining and Agricultural with 4,000 workers in each, the employment sample for those are only 1.8 individuals, hardly a statistically useful sample size. Aggregating for quarterly data increases the sample by three times. When one considers the unemployment data at 2.2%, that is only 21 individuals. Aggregating it for the three months it is still only 63 individuals-useful but subject to statistical variations.

Electrical engineers had a record population of 692,000 in the first quarter of 1999. The survey count would have been 313. Unemployment however was at 1% indicating an unemployment number of 3.13 individuals that aggregated to 9.39 individuals counted during the quarter. During 1998, EE unemployment increased rapidly from 0.8% to 3.4% due to the delayed response to the Pacific Rim monetary problems. It just as rapidly decreased to 1% as EE's quickly found employment in other economic sectors. The rapid rise in unemployment was predictable and was predicted. Another engineering specialty, Petroleum, with only 15,000 population did show enough variation in unemployment to indicate problems in the Oil Patch. The statistically invalid number was 26.7% and it indicated serious problems from the collapse of oil prices. Marine engineers with 19,000 population showed a statistically invalid increase to 12.3% as exports to the Pacific Rim collapsed.

Information Technology employment is showing signs of some problems. Last year, Programmer unemployment averaged 1.4% and Computer Science employment averaged 1.3%. The first quarter of this year showed Computer Science and Programmer unemployment at the 1.9% level. Computer Science unemployment had been increasing quarterly from 1.1%, 1.3%, 1.7% and then the 1.9%. The trend is a statistically valid indicator of developing oversupply.

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