Placement Opportunities for Human Factors Engineering and Ergonomics Professionals in Industry and Government/Military Positions

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During the period from January 2004 through December 2004, the Placement Service of Human Factors and Ergonomics Society distributed announcements describing 115 new positions available for human factors and ergonomics professionals. This paper describes the 92 placement opportunities in Industry and the Government/Military. The attributes of the position descriptions examined include: employment sector, degree requirements, work experience, expertise, salary, and geographic location.

The type of industry seeking most employees was Consumer Products at 16%. The degree required was usually a Masters (43.5%) and the geographic area with the most jobs was the Northeast (N=15). The area of expertise most frequently requested by employers was Human Computer Interaction (N=50). Human Factors/Ergonomics (N=22) was the most commonly specified job expertise.

During the period from October 25, 2004 through December 25, 2004, forty-three announcements for new positions were listed on HFCareers.com. Findings are discussed separately for the HFES Placement Service and HFCareers.

During the period from January 2004 through December 2004, the Placement Service of the Human Factors and Ergonomics Society (HFES) posted job listings describing 115 new positions available for human factors and ergonomics (HF&E) professionals. Employers completed a "Job Listing" form, provided by the HFES Placement Service, on which they provided information on factors including: employment sector, degree requirements, required work experience, salary, geographic location, and area of expertise required. The analysis of these data is the basis for this article. Please note that only data obtained for new positions in 2004 are analyzed in this article. Thus, positions listed prior to January 2004, which were still listed as positions available in the period following January 1, 2004, were not included. Additionally, this analysis is not a complete listing of all the positions available to HF&E professionals. Related positions are also listed with other placement services, including HFCareers.com.

Analysis of Placements Listed by the HFES Placement Service

Placement Opportunities by Sectors

The 92 positions discussed in this paper were categorized into two employment sectors: Industry (88%), and Government/Military (12%). The Industry sector increased 6% from 2002 (Voorheis, Snead, & Moroney, 2003), while Government/Military deceased (6%). The number of positions available in industry was 96 in the 2002 survey (Voorheis, Snead, & Moroney, 2003), and 81 in this analysis. The positions were classified by the authors according to industrial sector by type of industry (see Figure 1). Industrial sector was based on the type of industry described in the position

announcement. Some classifications were made easily (Lockheed within Aviation, Verizon within Telecommunications, US Army Research Institute within Military) while others (e.g. Foster Miller) were more difficult. Positions in organizations that employ human factors specialists and ergonomists as consultants in a variety of areas (Resource Consultants, Inc) were classified as consulting organizations. On the other hand, positions requested in specific areas (e.g. Medical) were classified by that organization's type of industry.

The type of industry requesting the most jobs was Consumer Products (N=15), followed by Military positions (N=14), Research/Development (N=13), and Consulting (N=13).

Consumer products accounted for 16% of jobs in this survey compared to 7% in 2002 (Voorheis, Snead, & Moroney, 2003). Government/Military accounted for 13% in 2002, while in this survey Government/Military accounted for 15%, an increase of 2%. The top eight industry types are listed in Figure 1.

Salary

Seventy-five percent of the employers did not specify a salary. Within the 23 positions for which salary was specified, the salaries ranged from a low of $30,000 to a high of $85,210 (compared to a range of $30,000 to $121,000 in 2002 (Voorheis et al, 2003), $33,000 to $95,000 in 1999-2000 (Schoeling, Goliber, & Moroney, 2001), and $33,000 to $100,000 in 1997-98 (Cummings-Hill, Means, Harrison, & Moroney, 1999)). The median salary minimum was $50,000 and the median salary max was $84,814.
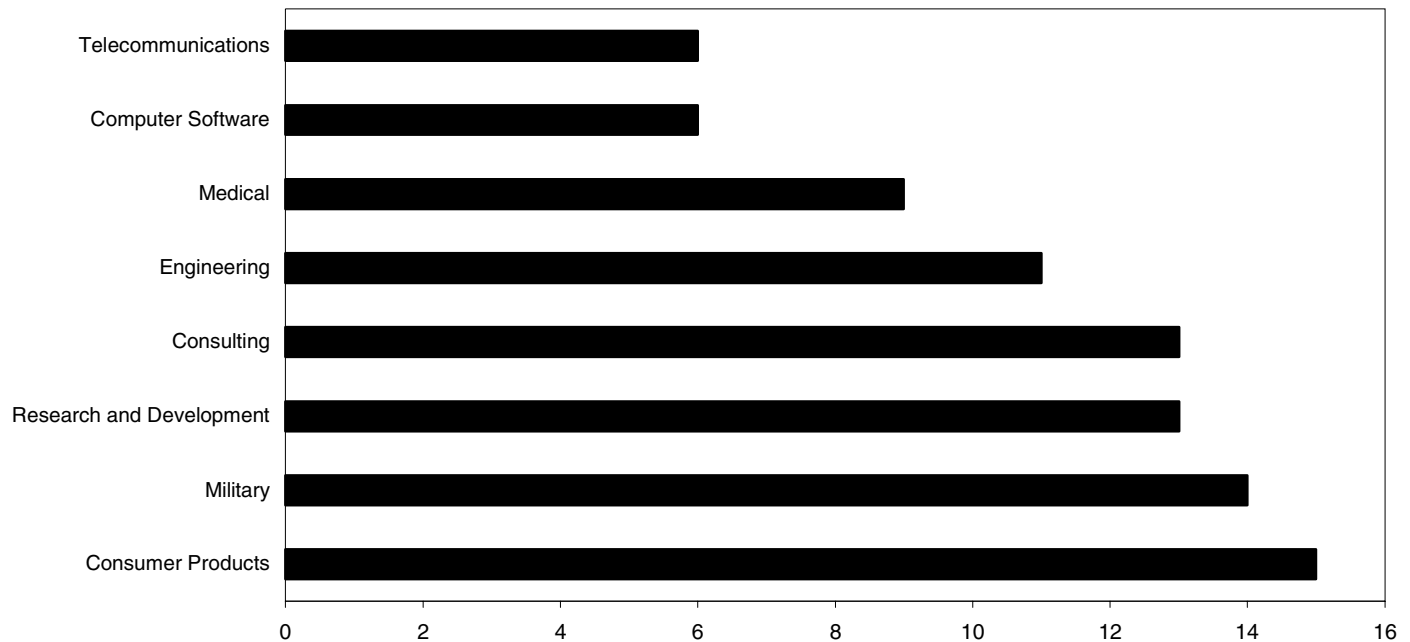
Figure 1: Placement opportunity by type of industry as reported by HFES (N=92)

Minimum Degree and Minimum Years Experience

The degree most frequently required in job announcements was a Masters (43.5%), followed by Bachelors (38%) and Doctoral (18.5%). A Masters degree was specified for 49% of the positions in the 2002 survey (denoting a decrease from 2002 to 2004). The median years of experience in Industry for all types of degrees range from 0 to 10 in Industry and from 0 to 5 for Government/Military. Table 1 provides a more detailed description, broken into source by type of degree and years of experience required by employment sector: Industry and Government/Military.

Geographic Location

The geographic areas with the most jobs were the Northeast (N=15), Mid Atlantic (N=14), and East Central (N=13). New England and California had 11 job announcements each. The Midwest region had 10 jobs, while the Southeast had 7. It was noted that in the Southwest there were 5 jobs and the Northwest had 3. No job postings were noted in the Mid Central region. Five positions were reported in Canada that there were two in other countries. Figure 2 provides a graphical display of this information, while Table 2 provides details within regions.

Database	Employment Sector	Degree Required	Years of Experience Desired	
			Median	Range
HFES N = 92	Industry (N = 81)	Bachelor (N = 29)	2	0 to 10
		Masters (N = 37)	2	0 to 10
		Doctorate (N = 15)	0	0 to 10
	Government/ Military (N = 11)	Bachelor (N = 6)	1	0 to 5
		Masters (N = 3)	0	0 to 1
		Doctorate (N = 2)	0	0
HFCareers N = 43	Industry (N = 40)	Bachelor (N = 27)	3	0 to 10
		Masters (N = 11)	3	0 to 7
		Doctorate (N = 1)	5	5
		Not Specified (N = 1)	0	0
	Government/ Military (N = 3)	Bachelor (N = 2)	4	3 to 5
		Masters (N = 1)	0	0
		Doctorate (N = 0)		

Table 1: Years of Experience and degree requirement for each employment sector as listed by the HFES Placement Service and HFCareers.com.
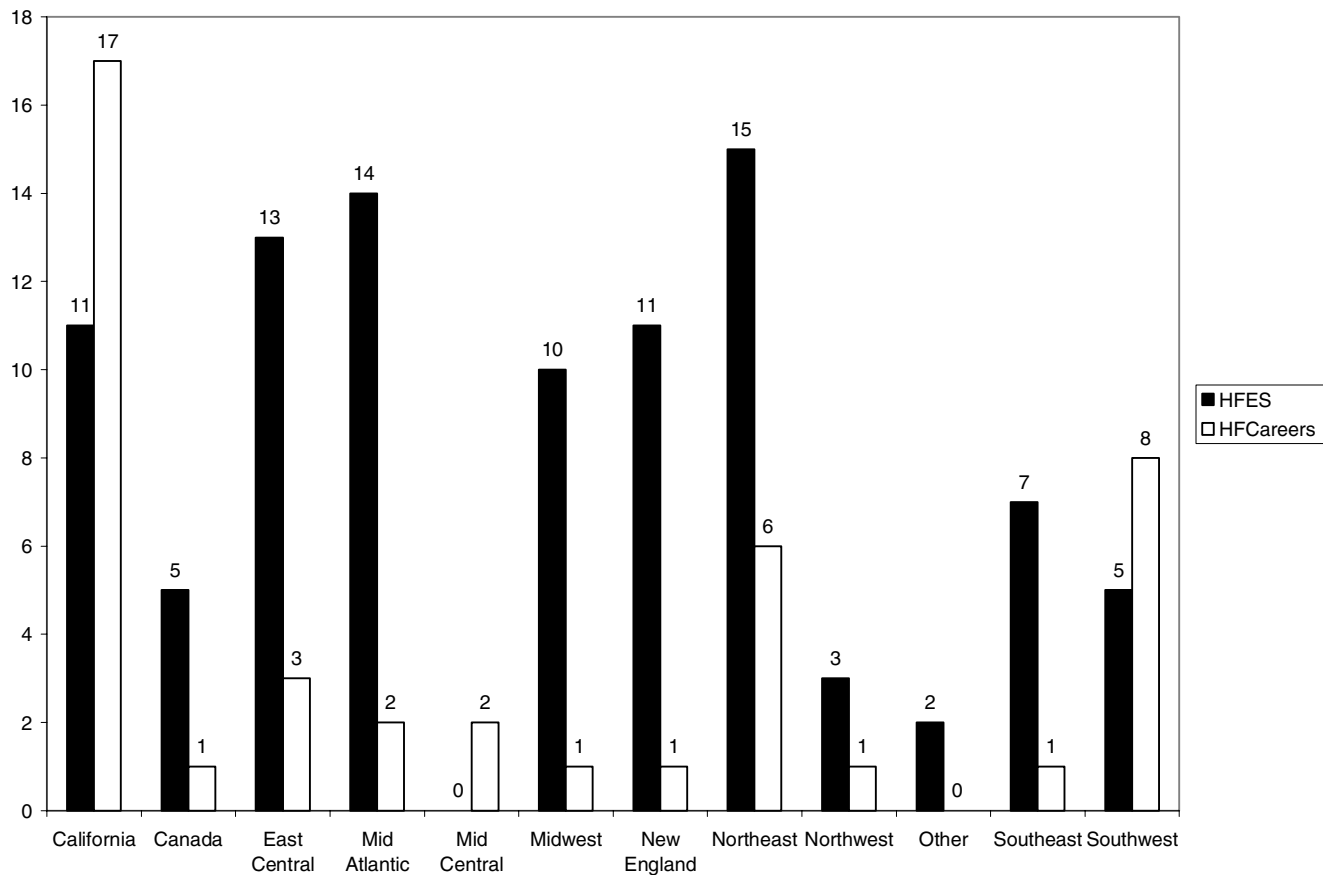
Figure 2: Position location by Region

California	East Central	MidAtlantic	MidCentral
*CA	*IN, *KY, *MI, *OH	*MD, *VA	*KS ,*MO
		DE, WV	AR, NE, OK
MidWest	**New England**	**Northeast**	**Northwest**
*IL ,*IA ,*MN, *WI	*ME	*CT, *MA, *NJ, *NY, *PA	*OR, *WA
ND, SD	NH, VT	RI	ID, MT, WY
Southeast	**Southwest**	**Canada**	**Other**
*FL, *GA, *MS, *NC, *SC	*AZ, *CO, *TX	*Canada	*Other Countries
TN, AL, LA	NM, UT, NV		AK, HI

Table 2: Placement Opportunities within a Region.
(* indicates States with positions)

Areas of Expertise and Job Expertise Specification

The data used for 'area of expertise' were extracted from the description of required skills. Employers were allowed to specify as many areas of expertise as necessary. These areas of expertise were not prioritized; therefore it was impossible to assess the primary needs of the employer. The fourteen most requested areas of expertise are reported in the Figure 3. Figure 4 specifies the number of requests for a particular expertise.

The areas of expertise indicate the variety of skills required of human factors professionals, and it was difficult to account for all potential skill areas within the 32 classifications that were used. The areas of expertise included, but were not limited to, individual areas as diverse as task analysis, information architecture, biostatistics, contextual inquiries, and voice/telephony interfaces. Human Computer Interaction (N=50), communication (N=44), testing and evaluation (N=39), and usability testing (N=37), and graphical user interface design (N=35) were the top five most requested areas of expertise. In 2002, the most requested skill was in Human Computer Interaction as well (N=23). Compared to 2002, the number of employers offering jobs requiring Human Computer Interaction expertise has increased over 100% (N=54).
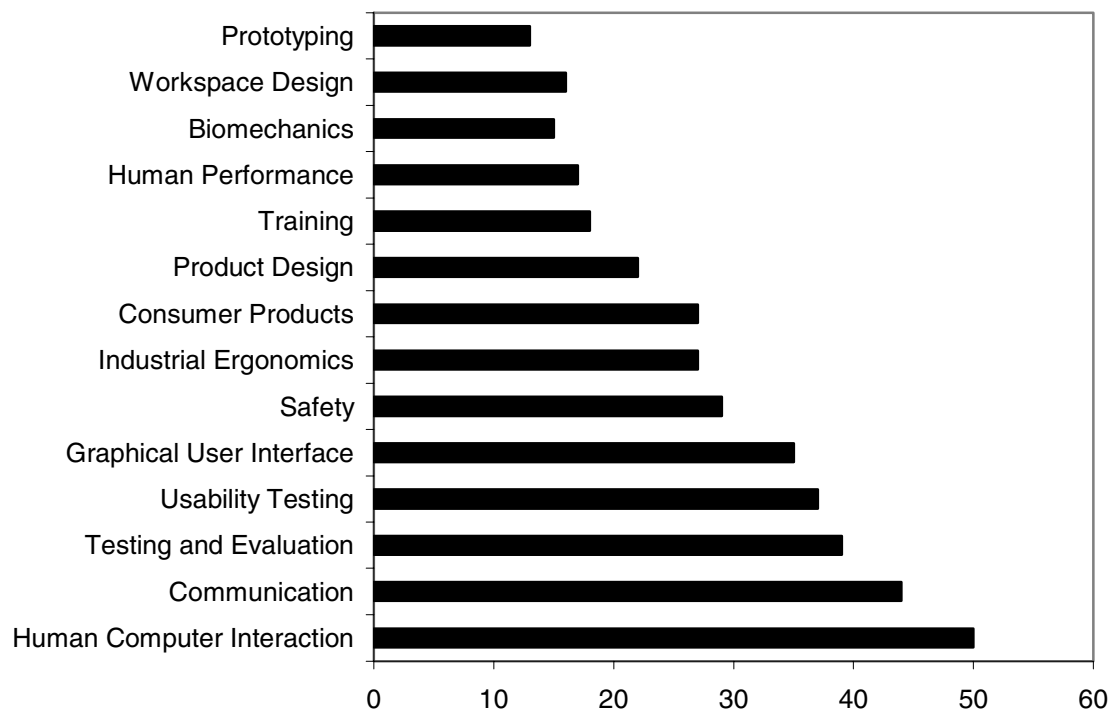
Figure 3: Areas of expertise requested for position in Industry and Government/Military as reported by HFES (N=92)
Note: More than one area of expertise was usually specified for each position.

Authors assigned each position to an expertise category based on the names of the HFES technical groups (TG) and the related subcategories within the TG. For example, HCI was considered a major category with a usability subcategory. The positions are categorized by area of responsibility. These data, summarized in Figure 4, support the previously reported 'area of expertise' finding indicating that employers specified human factors/ergonomics (N=22) and computer systems (N=16) categories most often. Other common expertise/functions requested by employers included usability (N=11) and consumer product design (N=10). Readers should note that the authors were limited to selecting one of the categories reflecting the titles of HFES technical groups, thus an individual could be desired with expertise in safety while employed in an aerospace/aviation industry.
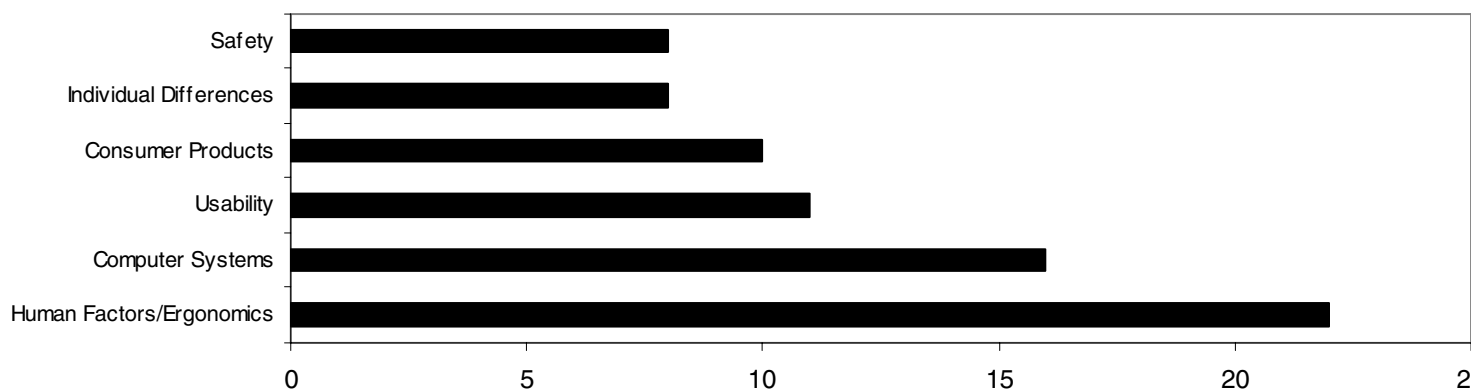

Figure 4: Total number of positions requested by area of job expertise/function.
Note: Areas of job expertise with less than four requests were not included.

Analysis of Placements Listed by HFCAREERS.COM

During the period from October 25, 2004 through December 25, 2004, forty-three announcements for new positions were collected from HFCareers.com. The 43 positions found were categorized into two employment sectors: Industry (93%) and Government/Military (7%). HFCareers had 5% more Industry jobs and 5% fewer Military jobs than the HFES Placement Service.

The type of industry seeking the most employees was Computer Software at 33% (N=14), followed by Aviation/Aerospace (N=7), Web Based Computer Software (N=6), Consumer Products (N=6), Transportation (N=4), and Computer Hardware/Software (N=2). Military ranked second (N=14) on the HFES placement site compared with last on HFCareers (N=1). The degree required was most often a Bachelor's (67.4%), followed by Master's (27.9%) and Doctoral (2.3%). More of the positions listed by the HFES Placement Service require a Master's degree as shown in Table 1.

The geographical areas with the most jobs were California (N=17), compared with the HFES Placement Service where (N=11). Following were Southwest (N=8), Northeast (N=6), East Central (N=3), MidAtlantic and MidCentral both had 2, Midwest, Southeast, Northwest, New England, and Canada each had 1 position. Both databases include positions from other countries.

Like HFES, more than one area of expertise could be specified for each position. The top 10 categories follow. The area of expertise most frequently requested by employers was Usability Testing and Design with 29. Following was Graphical User Interface (N=25), Consumer Products (N=23), Human Computer Interaction (N=22), Testing and Evaluation (N=13), Prototyping (N=11), Aerospace, Safety, and Product Design each had 10. There were 31 requests for areas of expertise not already categorized here The top six job expertise categories were Usability of Computer Systems (N= 6), Internet/Intranet Technology (N=6), Human Factors Engineering (N=5), Consumer Product/Equipment Design (N=5), Software Design (N=4), and Graphical User Interface Design (N=4). Human Factors/Ergonomics and Computer Systems were ranked first and second on HFES.

CONCLUSION

The authors hope that they have provided a useful analysis of the placement opportunities available to human factors and ergonomics professionals seeking positions in Industry and Government/Military. It is also hoped that these data will influence the educational opportunities provided to HF&E students.

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