

CENTER FOR SENSORIMOTOR NEURAL ENGINEERING

Improving lives by connecting brains and technology

October 27th, 2014

Building Tomorrow's Leaders: The Role of the Innovation Ecosystem

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ILO breakout session charge

1 - What knowledge, skills, experiences, and perspectives do graduate students need to gain in order to be “creative US innovators in a globally competitive economy”?

2 - Provide examples of graduate education structures and programs that help students attain valuable knowledge, skills, and experience in industrial collaboration, technology transfer, and technology translation to commercial application.



The value of IAB membership

1. Follow developments in a field related to my company's business (61%)
2. Support advances in a technology space important to my company (53%)
3. Gain access to specific expertise resident in the Center (37%)
4. Establish relationships with Center faculty members (33%)
5. Network with other industrial affiliate board members (28%)
6. **Evaluate students as potential interns or employees (26%)**
7. Leverage company resources through collaborative research (23%)
8. Access ERC developed intellectual property (19%)
9. Seek partnerships with other IAB members (11%)
10. Access to ERC facilities / equipment (9%)
11. All other responses (5%)

2004 – 40% had hired students and among those the student hire was reported as the top benefit of their membership

Sources:

- (1) The Impact on Industry of Interactions with Engineering Research Centers—Repeat Study; SRI International: Arlington VA, December 2004.
- (2) IAB Involvement in ERCs: Assessing and Strengthening the Role; Peter Seoane; presented at the NSF ERC Annual Meeting: Washington, DC, November 2012.



IAB Member Survey

What qualities do you seek in the graduate students you hire?

Please rank the following from most (1) to least (12) important.

What key skill or experience is missing from the list?

- 124 responses were obtained from
- 116 unique IP addresses (>100 companies?).
- 70 write in responses
- **Score = average rank = sum of ranks / 124**



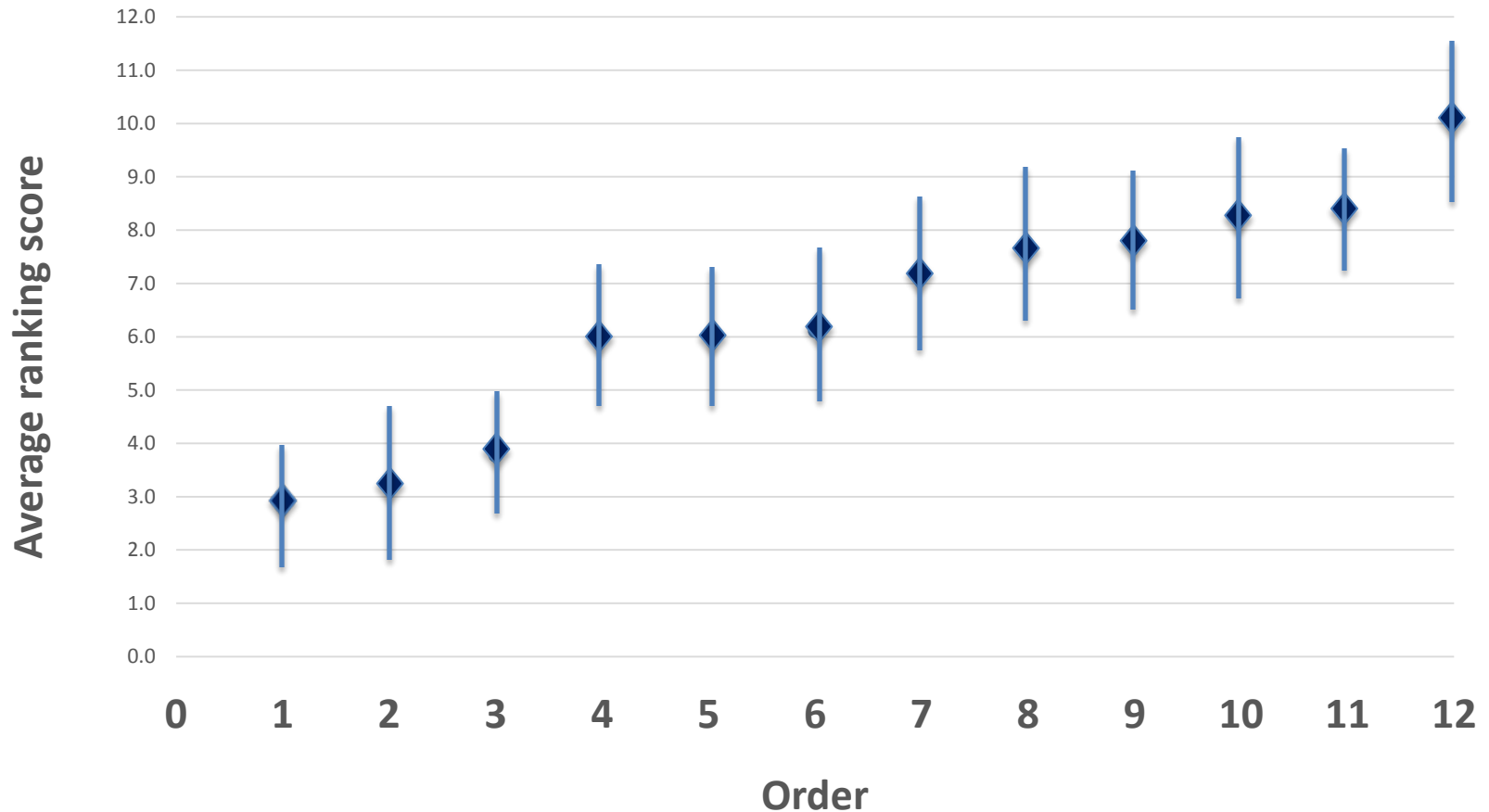
IAB Member Survey Results

<u>Rank</u>	<u>Score</u>	<u>Std Dev</u>	<u>Skill/experience</u>
1	2.8	2.3	• Ability to learn and understand the state of the art in a chosen area.
2	3.2	2.7	• Strong knowledge of fundamentals in thesis area and discipline
3	3.8	2.3	• Ability to communicate with colleagues from many disciplines.
4	6.0	2.7	• Deep experience in cross-disciplinary, project-based collaborations.
5	6.0	2.5	• Demonstrated leadership experience.
6	6.1	3.1	• Deep technical knowledge in their thesis area.
7	7.2	2.7	• Understand how a project's business risks/rewards are assessed.
8	7.7	2.8	• Some experience working on projects with commercial implications.
9	7.8	2.5	• Basic understanding of challenges in technology commercialization.
10	8.3	2.9	• Deep experience writing scientific reports and peer-reviewed papers.
11	8.4	2.4	• Basic knowledge of how ideas translate into inventions and IP.
12	10.1	3.0	• Solid teaching experience in a class or laboratory setting.



IAB Member Survey Results

Industry rank of student skills/experiences



IAB Member Survey Results

Themes from 70 Survey Comments

Industry seeks graduate student applicants that are:

- Creative problem solvers
- Effective communicators
- Willing to take risks and fail
- Taking initiative
- Team players



CSNE Graduate Training Examples



- **Industry/student contact**
- **NeuroVentures course**
- **TechTransfer Workshops**
- **Tech Sandbox, Hackathon**
- **Perfect Pitch Competition**



CSNE Graduate Training Examples

NeuroVentures Course launched in 2014

- 25 engineering and business students (5 CSNE) in 2014.
- Teams develop the business case for neuro-opportunities
- Lessons by entrepreneurs, investors, and other professionals
- Student teams generate executive summary and investor pitches



CSNE Graduate Training Examples

Tech Sandbox and Hackathon

- **Cross-discipline**
- **Student teams**
- **Vertical mentoring**
- **Industry mentors/judges**
- **Chance to risk/fail**
- **60 hour Hackathon**
- **10 week Tech Sandbox**

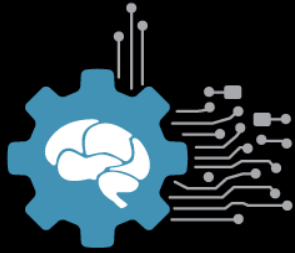


CSNE Graduate Training Examples

Perfect Pitch Contest

- **Students learn to better**
- ***Conceptualize* the work,**
- **Put it in *context*,**
- ***Convey* the essence,**
- ***Convince* the audience.**





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