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INTRODUCTION

This document summarizes search and hiring procedures in the Department of Electrical and Computer Engineering; it is work in progress and is updated continually. We have liberally used from a number of available resources and references, listed at the end of this document.

BEFORE THE SEARCH

Forming the committee

The committee is formed each year to include:

- Department Head (Chair)
- Associate Department Heads
- Chair of the Silicon Valley Strategy Committee as needed
- A mix of senior and junior faculty members in Pittsburgh
- A mix of senior and junior faculty members as needed
- One faculty member in Rwanda as needed

Administrative support includes:

- Director of Operations, for training and help with the online system
- Search administrator

Attention should be paid to include women and URM on the search committee as appropriate (see University of Michigan Handbook, p. 6).

Training the committee on unconscious bias

The Department of ECE at Carnegie Mellon University requires all members of the search committee to attend one of the sessions offered by the College of Engineering Center for Faculty Success on reducing the impact of unconscious bias in faculty searches. This includes:

- Pre-work
  - Implicit bias self-test from Harvard (one or more)
    https://implicit.harvard.edu/implicit/takeatest.html
  - Google Ventures workshop video on unconscious bias
    https://www.gv.com/lib/unconscious-bias-at-work
- In-person session interactive role-playing scenarios and following topics:
  - The diversity gap facts: minority and women leaking pipeline
  - Facts about Carnegie Mellon and College of Engineering in this arena
    - Numbers
- Progress/challenges and why be concerned about it
  (diversity makes us smarter, diverse groups perform better)
- Diversity is part of the CMU strategic plan
  - Evidence of gender bias in hiring
    - Removing bias improves gender diversity
    - Gendered self perception
    - Gendered language in reference letters
  - Evidence of racial bias in hiring
  - Unconscious bias is natural and ubiquitous
    - Approaches to reducing bias
    - When you eat affects your perception
  - Tips for unbiasing responses (keep responses short, simple, firm, ask questions, appeal to logic, avoid blame, focus on the situation, use “I” statements, avoid humor)

**Defining the position**

The Department was engaged in strategic planning during the 2014 and 2015 calendar years. As a result, a set of strategic thrust areas was identified. These thrust areas give focus to the Department’s goals, but are broad enough to attract a wide pool of candidates, and have thus been used to define the scope of the positions. In Silicon Valley and Rwanda, additional emphasis may be specified because of the smaller and more focused strategic needs. The rest of the suggestions from the University of Michigan Handbook, pp. 6-7 are addressed in the following sections.

**Online application & evaluation system**

The Department adopted the system designed at the School of Computer Science at Carnegie Mellon University. The system has portals for:

- Applicants
  [https://webapps.cs.cmu.edu/FacultyApplication/ECE/Welcome](https://webapps.cs.cmu.edu/FacultyApplication/ECE/Welcome)
- Search committee: the committee has its own space for evaluating applicants and sharing notes (internal)
- Home faculty: the entire applicant pool is available to all home faculty (internal)
- Admins (internal)

**First committee meeting**

The following should be covered at the first meeting:

- Introductions (see Forming the committee).
- Training the committee on unconscious bias
- Defining the position
• Online application & evaluation system
• Creating and placing the ad
• Expanding the pool: Charge to subcommittee to create a list
• Ground rules
• Establish Evaluation criteria for committee and interviewers
• Establish Evaluation process
• Establish Interview script for committee interviewers

Creating and placing the ad
We are keenly conscious of potential for bias when hiring; we used a number of resources to create a broad, inclusive, and welcoming ad (see Current hiring season ad).

• We used suggestions in MCS Faculty Searches to strengthen the ad.
• We used minimal required legal language at the bottom of the ad and then incorporated diversity statements as part of our mission at the top of the ad.
• We used the textio tool to create a more welcoming and stronger ad. We started with a score of 27 (weak); by paying attention to length, appropriate use of bulleted lists, limiting the use of corporate clichés, using positive language, strong use of active language and strong diversity statements, we moved our score to 96 (outstanding).

Expanding the pool
The pool is formed through the following mechanisms:

• Print media ads (Spectrum, Diversity in Action, Insight into Diversity, CMDiT)
• Web posting http://www.ece.cmu.edu/faculty-staff/employment/items/ECE-Faculty-Positions.html
• Email sent to department heads & selected colleagues.
• Rising Stars workshop participants & CRA-W list.

Ground rules
The committee adheres to the following ground rules (adapted from [11]):

• Pay attention to cognitive biases and errors in discussion (cloning, snap judgments, fit as it relates to culture, negative & positive stereotypes, elitist behavior, wishful thinking, euphemized bias—visionary, star).
• Adhere to the evaluation criteria previously agreed on.
• Attendance is the norm.
• Present/consider concrete evidence, not personal opinions.
• Strict confidentiality will be guaranteed.
• Decisions are made as in Evaluation process.
• Each committee member has equal time to speak.

Evaluation criteria for committee and interviewers

The committee agreed to use the following criteria are used for rating candidates (on the scale of not qualified (NQ), qualified (Q), desirable (D), once in ten years (O)).

1. Potential for scholarly impact based on the research statement
   (e.g., novelty, feasibility, significance, recognition)
2. Research record based on the CV
   (e.g., impact, journals published in, citations, awards, etc)
3. Letters from outside experts
4. Alignment with ECE strategic thrusts & potential to leverage strengths (e.g., cover letter, research statement, potential collaborators)
5. Ability to teach, attract, and mentor students based on the past experiences & teaching statement (e.g., clarity, alignment with department teaching needs)
6. Ability to contribute to diversity and inclusion based on the information provided in the application

Evaluation process

The committee evaluates candidates in batches. For each batch:

• The Search Admin releases a batch of completed applications only.
• The committee divides the candidates by areas to distribute workload.
• The committee starts by eliminating candidates who are not competitive.
• The committee decides on candidates to invite for a BlueJeans interview. The Search Admin starts scheduling those.
• The committee goes through the “undecided” candidates. Decisions can be made on those or left to be part of the following batch.
• After each round of BlueJeans interviews, the committee decides which candidates to invite for on-campus interviews.

If any candidate has been eliminated at this point with no possibility of being reconsidered, the candidate is sent a rejection letter as soon as possible.

At the end of the evaluation process, demographics information is received for the batch and the invitees (from the university).

Interview script for committee interviewers

Potential questions (adapted from [11]):
1. Tell us specifically why you would be an asset for our department. What contributions and in which areas do you see yourself making in our department?
2. What connections do you see yourself making in the department, at the university, and outside, to be successful?
3. Where do you see yourself in 5 to 10 years?
4. Who are the main players in the field where you aim to be a leader?
5. Tell us how your teaching has evolved over the past few years? (for a more junior candidate) Tell us what you have learned in your teaching/mentoring experiences?
6. We are interested in how you have mentored and inspired undergraduate and graduate students, in particular women and URM.
7. Tell us how you deal with colleagues you disagree with.
8. Recall a successful collaborative project you undertook in the past couple of years; what was your role in the project? Did you encounter any problems? How did you resolve them?

Potential questions aimed at determining civility (adapted from [19]):

- What would your former employer say about you — positive and negative?
- What would your former subordinates say about you — positive and negative?
- What about yourself would you like to improve most? How about a second thing? A third?
- Tell me about a time when you’ve had to deal with stress or conflict at work. What did you do?
- What are some signals that you’re under too much stress?
- When have you failed? Describe the circumstances and how you dealt with and learned from the experience.
- What are some examples of your ability to manage and supervise others? When have you done this well?
- What kind of people do you find it most difficult to work with? Tell me about a time when you’ve found it difficult to work with someone. How did you handle it?

Informational items for any faculty interviewing candidates:

- Point candidate to ECE strategic thrust figure and position papers on thrust areas.
- Point candidate to ECE strategic plan.
- Provide/point candidate to the ECE Fast facts.
DURING THE SEARCH

Inviting candidates for a BlueJeans pre-interview

All candidates will be pre-interviewed via BlueJeans.

• The Chair issues an invitation to the candidate.
• Once the invitation has been accepted, the Search Admin arranges 1-hour BlueJeans session with the Search Committee ONLY (the Chair makes sure that the experts are present). The understanding is that the committee will talk to the candidate for at most 45 min. The pre-interview is a conversation with the Search Committee members using questions assigned in advance.

BlueJeans pre-interview

BlueJeans interviews are used for pre-screening candidates and creating a short list for the campus visit. These pre-interviews are conducted with the committee only, following the agreed upon script:

• The Chair welcomes the candidate and asks those present to introduce themselves.
• The Chair invites the candidate to introduce him/herself in five minutes focusing on the big picture of the research, philosophy of teaching as well as working with diverse communities.
• The committee then asks questions assigned in advance. Committee may follow up on any answer.
• After all questions have been asked, the Chair invites the committee members to ask any additional questions.
• Finally, the Chair invites the candidate to ask questions.
• The pre-interview closes with the Chair thanking the candidate and stating when the follow up may be expected.

Inviting candidates for a campus visit

After each round of BlueJeans pre-interviews, the committee decides on which candidates to reject, keep on the undecided list and which to invite for a campus visit. For this last group:

• The Chair issues an invitation to the candidate.
• The Chair invites a faculty member to serve as ambassador for the candidate.
• Once the invitation has been accepted, the Search Admin follows up.
• The ambassador contacts the candidate directly, takes him/her to dinner the night they arrive if early enough or possible breakfast the morning before their first day. Ambassador brings the department welcome packet to give to the
candidate. It should include: schedule, department promotional material, and department gift.

• The Search Admin sends an email a week ahead of the visit with the following information:
  o Talk: length, audience, etc
  o Interviewers: schedule with names, titles, departments, etc. (build a break into the schedule)
  o Students: names, groups, etc.
  o Included in the email: Dual Career: If you are part of a dual-career couple, Carnegie Mellon can assist your partner in looking for a position in Pittsburgh. For academic searches, this describes how to receive assistance: http://www.cmu.edu/jobs/dual-careers-herc/faculty.html. For non-academic searches, Courtney Bryant in HR (cbryant@andrew.cmu.edu) can assist with the search process.
  o Included in the email: Family Leave Policy: https://www.cmu.edu/policies/faculty/faculty-parental-leave.html

**Campus visit**

For each candidate visit:

• Meetings are scheduled with:
  o The Department Head
  o The Search Committee together
  o Chalk talk open to all home faculty (chalk talk will not always be scheduled, especially when there are many candidates being interviewed)
  o Interested faculty

• Each interviewer should follow a similar script.
• Each interviewer should be aware of what is legal to ask and what is not (see Legal versus discriminatory questions)
• Each interviewer should receive a PDF packet containing:
  o List of potential questions (for search committee only)
  o Legal vs discriminatory questions
  o Informational items (department thrust areas, department fact sheet)
• The Department Head will cover the following topics during the meeting (a guideline, some of it is driven by the candidate’s needs):
  o Overview of the department (strategic thrusts, interdisciplinary research, etc)
o PRT process at Carnegie Mellon instantiated to the candidate (long tenure clock, if the candidate comes from another university, at most four years can be counted towards previous years of service)
o Research/fundraising expectations
o Teaching expectations (one course/semester)
o Service expectations
o Candidate needs in terms of a startup fund

• The Department Head/Search Chair follows up with the candidate after the visit and send an email to home/courtesy faculty + PhD students with links to feedback.

Ratings
• All people who meet the candidate rate the candidate (see Appendix Candidate evaluation).
• Department Head provides the details of the process as well as statistics (average ratings, # of faculty responded, etc) to all.

Communicating with faculty during the search
Faculty are kept abreast of the search process. To that end:

• The Department established a wiki page with list of candidates, dates of visit, areas, links to their packages, feedback forms, doodle polls, etc.
• The Department Head gives regular updates at faculty meetings and via email during the search period.

Elements that make CMU ECE/Pittsburgh appealing
• Pittsburgh is a livable city (rankings).
• Pittsburgh is an affordable city (article in Huffington Post).
• CMU ECE is interdisciplinary.
• CMU ECE has a collaborative and supportive culture for junior faculty (mentoring, Junior Faculty Committee, Junior Faculty Handbook, etc).

AFTER THE SEARCH

Notify all candidates
At some point during the process, all candidates should have been contacted by the Department. Rejection notices should be sent as early as possible.
The Department of Electrical and Computer Engineering (ECE) invites applications for tenure, research, and teaching-track positions.

We are strongly committed to all members of our community: students, faculty, and staff. Our vision is to be a creative driving force, within the university and worldwide, of the highest scholarly and entrepreneurial quality. Our mission is to inspire and educate engineers capable of pursuing fundamental scientific problems and important societal challenges. We strive to accomplish this with the highest commitment to quality, integrity, and respect for others. We are particularly interested in applicants who are committed and have passion for a culturally diverse environment in research and/or teaching, and demonstrate a willingness to nurture the uniquely inclusive Carnegie Mellon environment. We take pride and active steps in considering a diverse applicant pool in terms of gender, race, veteran status, and disability. Carnegie Mellon University seeks to meet the needs of dual-career couples and is a member of the Higher Education Recruitment Consortium (HERC) that assists with dual-career searches.

We are looking to hire in strategic thrust areas (http://www.ece.cmu.edu/research/index.html) with particular attention to nanoscale systems and the heterogeneous integration of circuits, emerging devices, sensors and novel materials. as applied to information storage, advanced computation, bioelectronics, communication and other integrated systems. We have recently upgraded our nanofabrication lab to a new state-of-the-art 10,000 sq ft user facility (http://www.nanofab.ece.cmu.edu/). We are looking for candidates to leverage these new facilities to advance the state-of-the-art in integrated systems and contribute to the vibrant nanoengineering community at Carnegie Mellon

• Tenure-track faculty carry a moderate teaching load that allows time for quality research and close involvement with students. We expect you to establish and grow a strong research program, contribute to our teaching mission, and show your passion for mentoring and advising students.
• Research-track faculty are not required to teach, but do so occasionally when of clear benefit to the faculty and the Department; you will be compensated for both teaching and advising PhD students. You will typically focus on developing leadership within your area of research, developing research collaborations, and supervising Ph.D. students.
• We are also looking to hire teaching-track faculty in the area of computer systems, with background and expertise in digital system design, FPGAs, C and assembly programming, and computer architecture. Teaching-track faculty typically focus exclusively on teaching and service, but may conduct research as well. Our teaching faculty to strengthen our teaching and mentoring mission.

For all tracks, we are seeking individuals who hold a Ph.D. in a relevant discipline and have demonstrated commitment to our core values: scientific truth, creativity, quality, innovation, and engineering solutions, all within a diverse and tight-knit community guided by respect and joy of doing. Faculty positions are primarily at the Assistant Professor level; however, appointments may be made at the rank of Associate Professor or Professor depending on the qualifications. Our department and the College of Engineering are ranked among the top programs in the United States both at the undergraduate and graduate levels. We house and have ties to several...
multidisciplinary institutes and centers. We collaborate with colleagues around the world through a number of formal research and educational programs. We have extensive experimental and computing infrastructure, including state-of-the-art nanofabrication facilities.

Please submit an online application at http://www.ece.cmu.edu/faculty-staff/employment/index.html. We will begin evaluation of applications immediately and will continue throughout the academic year until positions are filled; we encourage you to submit early. Carnegie Mellon is an EEO/Affirmative Action Employer -- M/F/Disability/Veteran.
**Legal versus discriminatory questions**

This table is reproduced from see University of Michigan Handbook, p. 8.

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>LEGAL QUESTIONS</th>
<th>DISCRIMINATORY QUESTIONS</th>
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</table>
| **Family status**   | Do you have any responsibilities that conflict with the job attendance or travel requirements? | Are you married?  
|                     | *Must be asked of all applicants.*                                             | What is your maiden name?  
|                     |                                                                                  | Do you have any children?  
|                     |                                                                                  | Are you pregnant?  
|                     |                                                                                  | What are your childcare arrangements?                                                  |
| **Race**            | None                                                                            | What is your race?                                                                     |
| **Religion**        | None                                                                            | What is your religion?  
|                     | *You may inquire about availability for weekend work.*                          | Which church do you attend?  
|                     |                                                                                  | What are your religious holidays?                                                      |
| **Residence**       | What is your address?                                                           | Do you own or rent your home?  
|                     |                                                                                  | Who resides with you?                                                                  |
| **Sex**             | None                                                                            | Are you male or female?                                                                |
| **Age**             | If hired, can you offer proof that you are at least 18 years of age?            | How old are you?                                                                       |
|                     |                                                                                  | What is your birthdate?                                                                |
| **Arrests or convictions** | Have you ever been convicted of a crime?                                      | Have you ever been arrested?                                                          |
|                     | *You must state that a conviction will be considered only as it relates to fitness to perform the job being sought.* |                                                                                  |
| **Citizenship or nationality** | Can you show proof of your eligibility to work in the U.S.? | Are you a U.S. citizen?  
|                     | Are you fluent in any languages other than English?                             | Where were you born?                                                                   |
|                     | *You may ask the second question only as it relates to the job being sought.* |                                                                                  |
| **Disability**      | Are you able to perform the essential functions of this job with or without reasonable accommodation? | Are you disabled?  
|                     | *Show the applicant the position description so he or she can give an informed answer.* | What is the nature or severity of your disability?                                      |
Candidate evaluation

Please use this form to record your observations about the candidate.

Candidate’s name: ___________________________ Evaluator’s name: ___________________________

Please indicate which of the following are true for you (check all that apply):

☐ Read candidate’s CV and letters  ☐ Attended candidate’s talk  ☐ Met with candidate
☐ Other: ___________________________

Please comment on the candidate’s scholarship as reflected in the talk and/or your meeting with the candidate:
________________________________________________________________________________________________________________________
________________________________________________________________________________________________________________________

What do you consider to be the candidate’s fit into the strategic thrusts of the department (check all that apply):

Systems & technologies:

☐ Beyond CMOS
☐ Data/network science systems
Comments:

☐ Cyber-physical systems
☐ Compute/storage systems

☐ Secure systems

Application domains:

☐ Energy
Comments:

☐ Mobility
☐ Smart infrastructure
☐ Healthcare & QoL

Theoretical & technological foundations (please explain):

Comments:

Please rate the candidate’s potential in each of the following:

(Ο: once in 10 years; D: desirable; Q: qualified; NQ: not qualified)

Potential for scholarly impact based on the research statement (e.g., novelty, feasibility, significance, recognition)

Research record based on the CV (e.g., impact, journals published in, citations, awards, etc)

Letters from outside experts

Alignment with ECE strategic thrusts & potential to leverage strengths (e.g., cover letter, research statement, potential collaborators)

Ability to teach, attract, and mentor students based on the past experiences & teaching statement (e.g., clarity, alignment with department teaching needs)

Ability to contribute to diversity and inclusion based on the information provided in the application

Any other comments?

Last revised: January 5, 2018
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