



EMI Machine Learning in Mechanics Committee OPERATIONS MANUAL

Authors:

Michael D. Shields, Ph.D., P.E., M.ASCE
(michael.shields@jhu.edu)

Hadi Meidani, Ph.D., M.ASCE
(meidani@illinois.edu)

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1 Definition and Scope

This document is the Operations Manual of the EMI Machine Learning in Mechanics Committee (MLC). It describes the operations that are specific to the EMI MLC within EMI and ASCE. It abides by (and, in case of inconsistency, it is superseded by) the bylaws and operation manuals of the parent organizations (EMI and ASCE). This document provides additional details on items not directly covered by, or diverging from, the EMI operation manual. For items not covered in this document, the EMI operation manual should be used as reference. This operations manual is intended to be a living document, continuously updated to meet the ever-changing needs of the Committee. Any major modification of this document is subject to approval by a 2/3 majority of the Committee members and by the EMI Board of Governors (BoG).

2 Purpose

The purpose of the EMI MLC is to advocate innovative use and development of machine learning techniques for the advancement of engineering mechanics through research and educational activities. The MLC encourages the creative use and establish best practices of machine learning for a diverse body of mechanics problems.

3 Leadership Group

3.1 Purpose

The Leadership Group (LG) has the responsibility for governance and oversight of the EMI MLC. The LG organizes, facilitates, and oversees the activities of the Committee.

3.2 Composition

The Leadership Group has three (3) elected officers: Chair, Vice-Chair, and Past Chair.

3.3 Qualifications

Each LG officer shall be a member in good standing of the ASCE, EMI, and EMI MLC. Student Members and Observers of the Committee shall not serve on the LG. A LG officer who ceases to be in good standing with the Institute while in office shall be automatically removed.

3.4 Term of Office

The term of office of each elected LG officer shall be two (2) years. At the end of the two-year term, the Chair shall become Past-Chair and the Vice-Chair shall become Chair, unless a member is removed for cause or a vacancy occurs for any reason. A new Vice Chair shall be elected at the end of each two-year term. All terms start on October 1st of any given year. Under special circumstances and when justified by a clear need of the Committee, the LG can serve an interim term, subject to approval by the BoG.

When a vacancy occurs on the LG, that vacancy shall be filled by the LG officers following

the same rules adopted for each end of a term, and a new special election for a Vice Chair shall be held. The new LG shall complete the remaining term in addition to a normal two-year term.

3.5 Compensation

Members of the LG shall not receive any salary or other compensation for their services, but they shall be entitled to reimbursement of travel expenses for participation in the Committee meeting during the annual EMI Conference, as per ASCE policy and within the budget allocated by EMI for the Committee.

3.6 Removal

A member of the LG who is otherwise in good standing with the Institute may be removed by a two-thirds vote of the EMI MLC members, subject to approval of the EMI BoG.

3.7 Duties of the Officers

The LG officers shall perform all duties required by the Society and the Institute's governing documents, and those duties incident to the office or as may be assigned. Such duties may include, but are not limited to, preparation for, attendance at, and participation in meetings of the EMI MLC, of the LG, and other official assignments.

3.7.1 Additional Duties of the Chair

The Chair, on behalf of the EMI MLC, shall:

- prepare and submit to the BoG an Annual Report for the Committee;
- keep the Committee roster up-to-date;
- collect and record votes from the Committee members on new membership applications, proposals of new activities, proposals of new procedures and changes to the manual of operations, etc.
- prepare budget requests for consideration by the EMI BoG;
- attend the annual meeting of the EMI BoG with the EMI committee chairs;
- organize the annual meeting of the Committee at the annual EMI conference;
- provide an agenda for the annual meeting of the Committee;
- suggest new activities for the Committee;
- provide leadership on changes to the manual of operations for the Committee;
- form task committees and subcommittees with specific duration and charge, subject to approval of BoG.

3.7.2 Additional Duties of the Vice-Chair

The Vice-Chair, on behalf of the EMI MLC, shall:

- discharge the duties of the Chair in his/her temporary absence or disability;
- update the Committee's website at least once a year (suggested time: about 1 month after EMI annual conference);
- have an advisory role on new activities for the Committee, changes to the manual of operations, etc.
- take minutes of LG meetings and Committee's meetings.

3.7.3 Duties of the Past-Chair

The Past-Chair shall serve an advisory role. The Past-Chair can substitute (both in terms of duties and reimbursement) one of the LG officers during the annual meeting of the Committee, in case such officer is unable to attend the meeting.

3.8 Elections

LG officers shall be appointed by the BoG preferably at the spring meeting of odd numbered years to take office on October 1 of that year. The President of the BoG may make interim appointments of LG officers at any time a vacancy occurs. The appointment shall automatically end on September 30 of odd numbered years (two-year term).

LG officers may not be reappointed to serve two consecutive two-year regular terms. Serving an interim term will not prevent appointment to a regular term immediately after the interim term.

Committee membership shall vote to recommend the name of new LG officers to be appointed to the BoG for approval. Applications for an LG officer position will be solicited by the committee Chair, or a designee of the BoG from among the members of the committee, at least 45 days prior to the closing date of the election. The application materials will be sent to all members electronically at least 30 days prior to the closing date of the election. The Chair shall gather rank-order votes from the committee membership for all nominees for LG officer positions. The candidate with the highest overall ranking in the voting will be elected as the LG officer. The chair will then forward the committee's recommendation for the LG officer position to the BoG for approval along with the application materials.

The application for an LG officer position should contain as a minimum a current curriculum vita, a short paragraph describing his/her vision for the committee and goals, and a short note expressing interest and commitment in serving as LG officer of the committee. Either self-nomination or nomination by a committee member is allowed. The President of the BoG shall inform the Committee chairs of their appointments and duties.

Committee membership of LG officers will be automatically extended for an additional term if the membership renewal date falls during the tenure of the leadership position. The President of the BoG shall inform each newly appointed Committee chair of the names and contact information of all Committee members. The BoG may release a Committee LG officer for failing to properly perform his/her duties.

4 DEI Delegate position

The EMI MLC further holds a DEI Delegate, whose role is to advocate Diversity, Equity and Inclusion within the EMI MLC, to liaise with the Mentoring and Diversity Committee as well as further EMI committees, and coordinate with relevant initiatives within EMI and ASCE at large.

This is a term that is renewed every 2 years, with the same person allowed to renew for a next term, if wished. It does not form part of the three positions of the LG and has no default continuation to a next role. It is a service position for those who wish to volunteer on the important goal of promoting diversity, equity, and inclusion within the EMI MLC. The Delegate is not excluded from nomination to a LG position.

5 Membership

5.1 Type of Membership and Qualifications

Committee members shall be members of the EMI. Specially qualified non-members may be appointed as observers of the committee and shall have advisory, non-voting status. Former members interested in the activities of the Committee, but not able to satisfy participation requirements to the Committee, may also be appointed as observers of the Committee. Additionally, applicants to the EMI MLC who do not fulfill the requirements in Section 5.3 or who do not reach the 75% vote threshold necessary for membership will be given Observer status with the opportunity to reapply for membership after demonstrating committee engagement. Specially qualified senior doctoral students may be provided non-voting student membership status. Upon the recommendation of the committee, new committee membership must be approved by the BoG liaison. BoG liaison approval will not be necessary for observer or student member status members.

5.2 Membership Applications and Voting Procedures

The BoG may directly appoint a Committee member. The President of the BoG shall inform the appointee of his/her appointment and shall also inform the committee Chair.

The application for membership should contain as a minimum a current curriculum vita and a short note expressing interest in joining the committee and pointing to relevant expertise and experience that would benefit the committee. Self-nomination or nomination by a committee member is allowed. Application materials must be submitted to the committee Chair. **A preliminary screening of membership applications will be performed by the Committee LG officers before requesting a vote from the Committee members, based on minimum qualification requirements set by the guidelines below.**

The committee Chair shall circulate new member application package(s) to committee members periodically, at a minimum annually. The Chair shall gather votes in favor or against membership from the committee members. **At least 75% of the voting members or 50% of the total committee membership in favor of an applicant, whichever is less, would be considered as a positive recommendation by the committee.** Only

recommendation in favor of membership should be forwarded to the BoG liaison for approval.

The committee Chair is advised to procure as many votes as possible prior to finalizing the recommendation for membership by using electronic or other means in addition to committee meetings, with the Chair procuring votes from a majority of the committee members.

5.3 Minimum Requirements for Preliminary Screening of Membership Applications

The members of the EMI MLC believe that active participation to EMI-related activities is a fundamental criterion for acceptance in the Committee. Therefore, in addition to the requirements that are common to all EMI technical committees, supplementary minimum requirements will need to be satisfied for new membership applications to be considered for a vote by the EMI MLC members. In particular:

- New applicants with less than five (5) years of experience after completion of their highest degree will need to satisfy at least one (1) of the following three (3) conditions:
 - have presented at least one (1) abstract or organized at least one (1) minisymposium at one of the EMI annual conferences;
 - have at least one (1) journal paper published, in print, or accepted for publication in the Journal of Engineering Mechanics (JEM);
 - have completed at least one (1) paper review for JEM within the last five (5) years.
- New applicants with five (5) or more years of experience after completion of their highest degree will need to satisfy at least two (2) of the following three (3) conditions:
 - have participated by presenting an abstract or organizing a minisymposium in at least two (2) EMI annual conferences (including national or international conferences) within the last five (5) years;
 - have at least one (1) journal paper published, in print, or accepted for publication on JEM within the last five (5) years;
 - have completed at least one (1) paper review for JEM within the last five (5) years.

As part of their membership application, new applicants will be asked to provide the information needed to verify these minimum requirements, as well as a short description (300 words or less) of their interest in and expected contribution to the Committee's activities.

5.4 Appointments and Terms

All members shall be appointed for a term of five years with renewal for additional terms based on the recommendation of the committee Chair. Automatic release of duty with a letter of acknowledgement for service from the President of BoG will be issued at the end of the 5-year term. If renewal is recommended and accepted, the Chair of the committee will issue a letter of appointment with a copy to the President of BoG. A member may appeal his/her nonrenewal to the BoG. The appeal will be reviewed by the BoG and a decision for renewal or nonrenewal will be sent to the committee Chair.

Committee members may be released before the completion of their term upon recommendation of the committee Chair when due cause is presented to the BoG. The President of the BoG shall so inform the committee member. The member may appeal his/her membership termination to the BoG. The appeal will be reviewed by the BoG and a decision will be sent to the committee Chair. The EMI will maintain a list of committee members, contact information and the year the current term of the member ends. Annually, EMI shall send this information to committee members.

5.5 Requirements to Maintain Active Member Status and for Term Renewal

The Members of the EMI MLC believe that sustained participation in the Committee activities and contribution to advancing engineering knowledge in Machine Learning are necessary for maintenance of active member status in the Committee. In addition to the requirements that are common to all EMI technical committees, supplementary minimum requirements must be satisfied for renewal of membership at the end of each 5-year term. In particular:

- Members interested in renewing their membership will need to apply for the renewal by communicating their interest to the current Chair of the Committee.
- Members applying for membership renewal will be considered eligible if they participated in more than 50% of the electronic voting actions of the Committee (including new membership applications, changes in the manual of operations, leadership group elections, etc.) during their expiring 5-year term (as recorded by the LG Officers). Each electronic vote may contain multiple voting actions (e.g., email votes for multiple new membership applications will count as multiple voting actions). An explicit "abstain" vote will also be considered a valid participation to a voting action.
- Members applying for membership renewal will need to satisfy two (2) out of four (4) of the following requirements during their expiring 5-year term¹:
 - participation (i.e., organization of a minisymposium and/or presentation of a paper) in at least two (2) conferences among the EMI annual conferences and EMI International conferences;
 - participation in at least two (2) EMI MLC annual meetings (including remote participation);
 - service to the committee, including as: (a) LG officer, (b) reviewer for the annual EMI MLC Student Paper competition, (c) editor/associate editor for JEM, (d) guest editor for special issues/collections under the sponsorship of the Committee, (e) author of a Research Group Profile/Newsletter Article for the Committee, and (f) other similar activities that contribute to further the scope of the Committee (developing webinars and/or short courses, organizing conferences, etc.); and
 - publication of at least one journal paper in JEM.

As part of their membership renewal application, members applying for renewal will be

¹ While not included as a requirement for membership renewal, it is pointed out that any member of any EMI Committee is highly encouraged to complete an average of two (2) reviews per year, if invited to review papers for JEM.

asked to provide the information needed to verify these minimum requirements, as well as a short (300 words or less) statement of interest in continuing their activities as EMI MLC members.

Exceptions to these requirements may be granted to members who are otherwise participating in activities that further the purpose of the Committee, i.e., very active reviewers for other ASCE Journals, editors and associate editors for ASCE Journals or other journals related to Machine Learning, directors of research centers that are directly or indirectly contributing to the advancement of engineering knowledge in Machine Learning, etc. In addition, exceptions may be granted for distinguished members (e.g., those who have been recognized as EMI/ASCE fellow/distinguished members or received prestigious awards from EMI, ASCE, etc.) who are/have been active in the general field of Machine Learning. Exceptions may also be granted for extenuating circumstances, e.g., serious health issues, family members' health issues, life changing events (birth of children, loss of family members, etc.).

6 Activities of the Committee

The activities supported or organized by the EMI MLC are classified into annual (recurring) activities and special (ad-hoc) activities. These activities are organized based on the purpose of the Committee, the requirements set by the EMI manual of operations, and the interest of the EMI MLC membership; therefore, the list set in the present document should be updated at regular recurring intervals based on the feedback provided by the Committee membership.

6.1 Annual Activities

The following minimum list of annual activities are expected to be organized by or with the support of the EMI MLC:

- Organize the annual meeting of the Committee during the EMI annual conference.
- Keep the committee web page updated.
- Organize sessions and/or symposia at EMI conferences.
- Organize a student paper competition. Details in Section 6.3 below.
- Prepare budget requests for consideration by the EMI Board.
- Prepare and submit in a timely manner the Annual EMI Committee Report.
- Prepare and forward nominations for Society awards, Institute awards, Distinguished Membership and for advancement to the grade of EMI Fellow.

6.2 Special Activities

The following special activities may be organized by or with the support of the EMI MLC under recommendation of the LG or of members of the EMI MLC:

- Publications of monographs, survey, and review articles on ASCE Journal of Engineering Mechanics.
- Organization of special issues for EMI publications.

- Publication of collections of reviewed and revised papers from the conference symposia in the new Trends in Engineering Mechanics Special Publications series.
- Preparation of proposals for webinars.
- Preparation of proposals for seminars or short courses.
- Publications of monographs, survey, and review articles on non-EMI journals.
- Organization of special issues of non-EMI journals.
- Organization of special sessions in non-EMI conferences.
- Organization of joint activities with other societies and organizations having a purpose similar to that of the EMI MLC (subject to approval of EMI BoG if requiring a budget).
- Other activities that further the purpose of the Committee.

6.3 Student Paper Competition Organization

The LG shall identify a subcommittee to organize the annual student paper competition. The committee shall be composed of between 1 and 3 members with a Chair identified to serve a two-year term. Responsibilities of the EMI MLC's Student Paper Competition committee include:

- preparing and submitting to the BoG liaison the competition announcement;
- leading the fundraising efforts for the Competition's monetary award;
- collecting the student paper's submission;
- setting up the judging committee;
- providing the paper template to interested applicants;
- collecting the evaluations of the papers before the EMI conference;
- selecting the papers invited for presentation at the EMI conference;
- collecting the evaluations of the presentations at the EMI conference;
- selecting the winner(s) of the competition based on the judging committee's suggestions; and
- communicating in a timely manner the results of the student paper competition to the BoG liaison of the Committee

7 Modifications to the Operation Manual

Any modifications to the Operation Manual can be initiated through a written proposal submitted by any active status member of the Committee to the LG of the Committee. These modifications will be integrated into the Operation Manual after a positive vote (more than 50% of voting members) by the membership of the Committee.