

April 7, 2009

**RULES FOR
DIADEM SOFTWARE DEVELOPMENT COMPETITION**

April 2009 – September 2010

Sponsors:

**Allen Institute for Brain Science
Howard Hughes Medical Institute
Krasnow Institute of George Mason University**

1. **The rationale for the competition:** The Sponsors are holding the Digital reconstruction of Axonal and DEndritic Morphology (DIADEM) software development competition, also called the DIADEM Challenge, to benefit the scientific community by encouraging the development of better software for automating three-dimensional reconstructions of neuronal arbors. The intent of the Sponsors is to ensure that the best software submitted for the competition is made available to the scientific community within a reasonable time and on reasonable terms.
2. **Some basic information about the competition:** No purchase is necessary to enter or win. Individuals and teams may participate in the competition if they are eligible under the criteria described below. The winner or winners will be selected based on the quality of the software they enter into the competition, as determined by a panel of judges in their discretion and according to the criteria described below. The Sponsors of this competition are:

Allen Institute for Brain Science, Seattle, Washington: www.alleninstitute.org

Howard Hughes Medical Institute (HHMI), Chevy Chase, Maryland: www.hhmi.org

Krasnow Institute for Advanced Study, George Mason University, Fairfax, Virginia:
<http://krasnow.gmu.edu/>

The competition will have two rounds. The qualifying round of the competition will begin on April 9, 2009. As of that date, individuals and teams may register to participate in the competition and may download sets of image stacks (Data Sets) of non-human animal brains along with three-dimensional reconstructions for some of these Data Sets for training purposes. Registration must be done online through the competition website (www.diaDEMchallenge.org); see paragraph 4 below for more information. Submissions of software, including executable programs, supporting documentation, and reconstruction files for the Data Sets, must be uploaded to the competition website (www.diaDEMchallenge.org) no later than April 9, 2010. Competition judges will then select submissions to compete in the second and final round (Final Round), which will be held in conjunction with a scientific conference at HHMI's Janelia Farm Research Campus in Ashburn, Virginia, from August 29-September 1, 2010. In order to be eligible to win the competition, the individuals and at least one member of any teams whose submissions are selected for the Final Round (Finalists) must participate in the Final Round and scientific conference. Personal participation in the Final Round and scientific conference is important for two main reasons: first, because the Finalists' software will be tested at the Final Round against additional Data Sets so that the judges can select a winner or winners, and second, because the larger scientific conference, of which the Final Round will be a part, is intended to foster extensive scientific interaction among neuroscientists and computational scientists, including plenary and poster sessions to discuss challenges, solutions, and future directions.

All deadlines are final. No requests for extensions, including due to technical difficulties with downloads or uploads, will be considered.

3. **Who is eligible to compete:** Although the Sponsors intend that the competition be as open as possible, the following individuals are not eligible to compete either on their own or as part of a team:
- Anyone who will be a judge in the competition.
 - Anyone who provided a Data Set that is used in the competition (Data Provider).
 - Any co-worker of a Data Provider who participated in or had access to any analysis of one or more Data Sets used in the competition.
 - Anyone who attempts to get information about a Data Set used in the competition that would give him or her an unfair advantage over others participating in the competition. For example, if a participant asks a judge, a Data Provider, or a co-worker of a Data Provider for “inside information” that is not available to all those who are competing, that participant is disqualified and becomes ineligible to compete. Depending on the circumstances, asking for information in this way may also violate a participant’s institution’s policies on research integrity.
 - Any individual whose employer’s or institution’s policies do not allow him or her to compete under these rules.
 - Any individual who is studying or working in the U.S. without a valid visa and (if required) work authorization.
 - Any individual who is under 18 years of age as of April 9, 2009, the date the qualifying round of the competition begins.
 - Any individual who is not legally able to participate in the competition, for example because of legal restrictions that apply in his or her location.
 - Any nationals of a country that is designated by the U.S. Government as a state sponsor of terrorism, regardless of where these individuals reside, study, or work. As of April 3, 2009, these countries are Cuba, Iran, Sudan, and Syria. Similarly, any team based in Cuba, Iran, Sudan, Syria, or any other country that is designated by the U.S. government as a state sponsor of terrorism is not eligible to compete regardless of the nationality of team members.

PLEASE NOTE: Individuals who wish to enter the competition either on their own or as part of a team are responsible for confirming with their employer or institution that they may compete under these rules.

Foreign nationals who are studying or working in the U.S. and who are interested in participating in this competition are encouraged to consult with their visa sponsors to confirm that they may participate in this competition and accept a cash prize if they are selected as a winner.

4. **How to enter the competition:** Eligible participants can enter by registering on the competition website at www.diademchallenge.org at any time before the April 9, 2010 deadline for submissions. Those entering as a team must designate the team leader and include the names and identifying information of all team members. If the composition of a team changes over time, the team leader is responsible for providing updates on request.
5. **Criteria for judging software submissions:** The criteria for judging software submitted for the competition include: how consistent and accurate the software is in automatically reconstructing neuronal arbors; reconstruction speed; the compute power required to run the software and how efficient the software is relative to power required; generality; and ease of use. These criteria will be applied both to select the top software submissions for participation in the Final Round and to select the winner(s) of the competition at the Final Round. More specific details on these criteria are posted on the website at www.diademchallenge.org. All decisions of the judges are within

their discretion, are final, and may not be appealed or challenged.

6. **Personal attendance at Final Round and scientific conference; required certifications:** As noted above, submissions of software, including executable programs, supporting documentation (including source code), and reconstruction files for the Data Sets, are due no later than April 9, 2010. The judges will review the submissions and determine which individuals or teams to invite to participate in the Final Round and scientific conference. The Sponsors expect to issue the invitations shortly after the submission deadline and no later than June 24, 2010. If an individual who is invited to participate in the Final Round and scientific conference cannot personally attend for any reason, his or her software submission will not be considered in the Final Round and he or she will not be eligible to win. If a team that is invited to participate in the Final Round and scientific conference cannot send at least one member to attend the Final Round and scientific conference in person, the team's software submission will not be considered in the Final Round and the team will not be eligible to win.

Individuals and all members of teams invited to participate in the Final Round and scientific conference must also certify in writing that they agree to these rules and have complied with and will comply with all of the requirements imposed by these rules. If an individual or team does not provide these written certifications and confirm personal attendance within two weeks of issuance of the invitation, their invitation will expire, their software submission will not be considered in the Final Round, and they will not be eligible to win. The certification form may be viewed at http://www.diademchallenge.org/pdfs/DIADEM_Certification_Form_Finalists.pdf. The Sponsors reserve the right to make additional changes in this form that are generally consistent with these rules, at any time before invitations to participate in the Final Round and scientific conference are issued. The final form will be provided to invitees at that time. Those who sign the form and confirm that they will attend the Final Round and scientific conference in person will be considered Finalists.

If any potential Finalist cannot be located, or if any notice to a potential Finalist is returned as undeliverable, that potential Finalist may be ineligible to win and an alternate Finalist may be selected. The Sponsors reserve the right to validate registration information provided by competing individuals and teams before selecting Finalists or winners and to disqualify anyone who has provided false information.

7. **Travel and other arrangements for the Final Round and scientific conference:** Reasonable travel expenses of Finalists to attend the August 29-September 1, 2010 Final Round and scientific conference will be covered for up to five team members. Details on cost limits and procedures for making travel arrangements will be provided at a later date.

HHMI will provide lodging and meals at its Janelia Farm Research Campus to Finalists while they are there participating in the Final Round and scientific conference. While at Janelia Farm Research Campus, Finalists must abide by Janelia Farm's policies and procedures, such as security procedures and general policies regarding professional behavior, or they may be disqualified and required to leave the campus.

8. **Selection of winners at the August 29-September 1, 2010 Final Round and scientific conference.** The winner or winners will be selected based on the quality of the software submitted in the competition, determined by the judges based on the criteria described above. The following requirements must be met by an individual Finalist in order for him or her to be eligible to win, and by all members of a Finalist team in order for the team to be eligible to win:

- The deadlines for registration and submission of software must be met.
- Registration information must be correct and complete.

- The certification forms must be signed and timely submitted to confirm agreement and compliance with these rules.
- Individual Finalists and at least one member of a Finalist team must attend the Final Round and scientific conference in person.

All decisions of the judges are final and may not be appealed or challenged.

9. **Amount and payment of cash prize(s).** The total amount of the cash prize(s) to be awarded in this competition is \$75,000 (provided by the Allen Institute and HHMI). The judges, in their discretion, may award a single prize to a single winning individual or team (\$75,000) or may award multiple prizes in various amounts to multiple winning individuals or teams (for example, \$50,000 to a first winner and \$25,000 to a second winner or \$30,000 to a first winner, \$25,000 to a second winner, and \$20,000 to a third winner). The judges may also, in their discretion, decide that none of the software submissions meet expectations and no prize should be awarded. Winners who are U.S. citizens or residents must provide tax documentation (generally, IRS Form W-9) to HHMI, which will be handling the payment(s), before receiving any prize. Winners who are foreign nationals must also provide tax documentation to HHMI before receiving any prize. All prizes may be subject to withholding of U.S. taxes. The award and payment of prizes is also subject to all other laws and regulations. If any prize cannot be awarded by December 31, 2010 due to the action or inaction of a potential winner or due to any other circumstances beyond HHMI's control, neither HHMI nor the other Sponsors shall have any obligation to award the prize. Prizes are not transferable or assignable. Winners are solely responsible for any expenses they incur in connection with this competition, except as described above for expenses relating to attending the Final Round and scientific conference. Prize payments are expected to be reportable to individual winners on IRS Form 1099, and recipients are responsible for paying any taxes due on the payments.
10. **Rights in and use of software entries.** As noted above, the Sponsors are holding this competition to benefit the scientific community by encouraging the development of software that could save a great deal of time and effort currently spent on manual tracing of neuronal arbors. The point of this competition, therefore, is to make the best software that is submitted (i.e., the submissions that are selected for and judged in the Final Round) available to the scientific community, within a reasonable time and on reasonable terms. In recognition of the contributions made by the Sponsors, Data Providers, and judges for this competition, these organizations and individuals should also have the right to use the best software that is submitted in this competition in their own research, and the right to tailor it for their needs. These obligations and rights are not limited to the winning software, but apply to all software submissions that are selected for and judged in the Final Round ("Finalist Software"). For all Finalist Software, the following rules on ownership and rights apply:
- Ownership will remain with the author(s) or their institutions or companies.
 - Each Sponsor (Allen Institute for Brain Science; Howard Hughes Medical Institute; and Krasnow Institute for Advanced Study, George Mason University) shall have a non-exclusive, royalty-free, worldwide, perpetual, irrevocable license to use, copy, modify, and create derivative works of the software for research purposes; provided, however, that HHMI's license is limited to use, copy, modification, and creation of derivative works at or for HHMI's Janelia Farm Research Campus.
 - Each judge and Data Provider shall have a non-exclusive, royalty-free, worldwide, perpetual, irrevocable license to use, copy, modify, and create derivative works of the software for research purposes in their individual laboratories and offices.
 - The software must be made available for public use on reasonable terms within six months of the end of the competition, i.e., no later than March 2, 2011. Finalists are encouraged to

make their source code available. However, software will be considered “made available for public use” if an executable version is available, provided that the algorithms are also published or posted. In this case both the executable version and the algorithms must be available within the six-month deadline.

- If the software is not available for public use on reasonable terms within six months of the end of the competition, each Sponsor shall have an additional non-exclusive, royalty-free, worldwide, perpetual, irrevocable license to use, copy, modify, create derivative works of, display, transmit, publish and distribute the software and derivative works of the software, including the source code. Similarly, if the software initially is available for public use on reasonable terms within the six-month deadline, but then becomes unavailable to the public for more than one month, each Sponsor will each have a non-exclusive, royalty-free, worldwide, perpetual, irrevocable license to use, copy, modify, create derivative works of, display, transmit, publish and distribute the software and derivative works of the software, including the source code. For clarification, these rights apply to the version of the software that is judged in the Final Round, and do not apply to subsequent enhancements or modifications.
- “Reasonable terms” include pricing that is reasonable given the functionality of the software (including its consistency, accuracy, compute power requirements, speed, and generality).
- A complete and accurate copy of the source code for software that is judged in the Final Round must be submitted to HHMI. HHMI will share this source code with others who have use rights under paragraph (b) above, on the understanding that it is not to be published or further distributed except (i) under the license provided for above, or (ii) in the unlikely event that there is a legal requirement to provide source code to others.
- As part of the certification that is required for participation in the Final Round and scientific conference, each Finalist who will be competing in the Final Round must certify that the submitted software is original work, does not infringe copyrights or other intellectual property or proprietary rights owned by any third party, and can be subject to these rules without violating any laws, regulations, or licenses or other agreements with third parties. This means, among other things, that no third-party code can be included in the software submitted for the Final Round unless the copyright holders or owners of other intellectual property or proprietary rights in the code have agreed in writing that the third-party code can be subject to these rules.
- The names, marks, and logos of the Sponsors may not be used for any purpose, including marketing or promoting any software, without the specific prior written consent of the relevant Sponsor, which may be granted or withheld in that Sponsor’s discretion. Similarly, the names of the judges, Data Providers, or other individuals involved in administering or judging this competition may not be used for any purpose without their specific prior written consent (and, if required by their employer’s or institution’s policies, the consent of their employer or institution).
- Each participant in this competition is responsible for ensuring that these rules are acceptable to his or her employer or institution.

11. **Additional general terms.** All registration information provided by those applying to participate is subject to verification by the Sponsors. Copies of registration information, certification forms, software submissions, and other documentation become the sole property of the Sponsors and will not be returned. The Sponsors assume no responsibility for registration information, software submissions, or other documents or correspondence that are lost, late, misdirected, stolen, illegible, undelivered, garbled, damaged, incomplete, falsified, altered, or tampered with (and any such software submissions may be deemed ineligible to compete or win), or for any computer, online, telephone, or technical malfunctions that may occur. The Sponsors assume no

responsibility for any technical problems in connection with the transmission or receipt of registration information or software submissions, including faulty electronic data transmission, traffic congestion on the Internet or on websites, hardware or software error, equipment failure or malfunction, or other online communications problems. The Sponsors assume no responsibility or liability for the receipt or use of any prize(s).

If for any reason this competition is not capable of running or being completed as planned, including infection by computer virus, bugs, tampering, unauthorized intervention, fraud, technical failures, or any other cause which corrupts or affects the administration, security, fairness, integrity, or proper conduct of the competition, the Sponsors reserve the right, at their sole discretion, to disqualify any participant that is responsible or that tampers with the competition, and to modify, cancel, or terminate the competition, and, if applicable, select Finalist(s) and/or winners from all eligible entries received prior to the cancellation or termination.

This competition is being held in the Commonwealth of Virginia, is governed by the law of the Commonwealth of Virginia, without regard to choice of law or conflict of law principles, and is subject to all applicable laws and regulations of the Commonwealth of Virginia. While the decisions of the Sponsors and the judges relating to this competition are final and may not be appealed or challenged, to the extent that there is any legal dispute relating to or arising out of the competition, it shall be adjudicated only in the federal or state courts serving Loudoun County, Virginia. Participants agree that they are subject to personal jurisdiction and venue in the federal and state courts serving Loudoun County, Virginia for all matters relating to or arising out of the competition. This competition is void wherever prohibited or restricted by law. Participants agree to abide by these rules and the decisions of the Sponsors, which are final.

12. **Announcement of winners:** The Sponsors shall have the right to publish, on their websites and in other media, the names, photographs, likenesses, geographical location, and institutional affiliations of all Finalists and winners in connection with announcing the results of the competition.