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AROPÄ — A Peer Assessment System

User Manual

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1 Aropä overview

Aropä is a peer assessment system that has been designed for *routine* use in *large, undergraduate* classes. We have designed the system with the goal of making it possible to use peer assessment in every assignment in every course. The system incorporates mechanisms for identifying and mitigating the influence of “rogue” students, and to reward and encourage thoughtful, critical review.

The interface to Aropä is almost entirely browser based. Students interact using any standard browser, and most administrative functions are controlled through a browser interface. The only time a browser is not used is when copying files from an existing electronic submission system to an area the web server can access them. A PERL utility is available that may help with this process.

Aropä is written in the language PHP [4], and requires a MySQL database [2]. The system must be installed on a central web server that is capable of running PHP (most are). A separate user authentication server (e.g., LDAP) will also be needed.

Aropä is not a complete academic administration system. It provides excellent support for peer assessment activities, but nothing more. In particular, it does not manage assignment grades.

We expect you will already have systems in place for student authentication, grade management, and perhaps electronic assignment submission. Keep using them. Aropä is designed to loosely interface to these systems. This means, for example, that you and your students will be able to immediately start using Aropä by simply logging on with a usual account name and password. No user registration is required¹, and there is no need to configure Aropä with enrolment lists, etc.

2 Managing courses and lecturers

Aropä distinguishes a lecturer from a student user by the presence of her user name in a database table. This table also specifies a set of courses. Each lecturer has complete access to the all data relating to her own courses. She does not get to see any data for other courses.

This is not due to a lack of trust, but as a means of controlling the volume of data presented. The trust model adopted by Aropä is to distinguish just two groups: students and lecturers. Students have tightly restricted access, while all lecturers have essentially full access to all of the system. If you don't like this, then you should probably move to another institution.

The **Manage Courses** page is used to add or remove lecturers and courses. It consists of two text areas: one for course codes, and one for

¹A very limited form of user registration is possible. See Section 7.2.

lecturers and their courses of interest.

A course code is any string you normally use to uniquely identify a particular course. Enter these one per line. The list does not have to be exhaustive, and you can add or remove entries at any time. The sole purpose of the course code is to limit the assignments available to a lecturer.

The lecturers and their courses of interest are given in the second text area. A course of interest can be a single course code, or a regular expression pattern. The regular expression pattern can include the special characters “*” and “?”, where “*” matches zero or more characters and “?” matches exactly one character. A lecturer name can appear on more than one line, in which case both course codes (or patterns) are included in their courses of interest.

A lecturer with just “*” as their course of interest will be able to view all courses. Access to the **Manage Courses** page is restricted to such “super users.” The Aropä database is installed with one such user, “admin.” This account can be initially be accessed without a password. One of first tasks of an installer should be to enter a “super user” with a real user name and remove “admin” from the lecturer table.

Aropä does not maintain any association between students and courses. The ability of a student to participate in a peer assessment task is determined by the appearance of his user name in an *allocation* (an allocation connects a reviewer to a piece of work to be reviewed). The participants will usually be students enrolled in your course, but the only restrictions are those imposed by your electronic submission system.

3 Assignments

When a lecturer logs in, a list is shown of all assignments he has created or that comes from his courses of interest. For a first time user, this list will be empty. The **New** page is used to create an assignment from scratch. Later, it may be easier to enter a new assignment by making a **Copy** of an existing one. An assignment can be modified at any time through the **Edit** page.

There are quite a few fields that can be set for an assignment. To exploit the full power of Aropä, you will need to be familiar with most of them.

3.1 Assignment name

Enter a descriptive name that will mean something to your students. By the time Aropä has been embraced by your institution, each student will probably have quite a number of assignments on the go at any one time (many of which will remain open for some time, to allow reading

the reviewer comments). You should aim for something a little more distinctive than “the assignment.”

3.2 Course

Select the course code from the drop-down list. If the one you want does not appear, there is no need to find a super user — just enter it in the field to the right.

Each assignment records the user name of the lecturer who entered it, so you will always be able to access this assignment, regardless of whether or not the course is registered in **Manage Courses**.

3.3 Submission directory

Leave this field blank if you wish for students to submit files directly into Aropä.

This points to a directory accessible by the web server that holds the student submissions for this assignment. Precise instructions on what to put in this field are difficult, as this is an area where Aropä interfaces to whatever electronic submission system you use. Aropä is not responsible for providing this directory, but uses it to extract author lists and to download files to reviewers.

Typically, the root of the submission directory will contain subdirectories for each course, and each course subdirectory will contain further subdirectories for each assignment within the course. The next level might contain either individual files (one for each submitted assignment) or further subdirectories (particularly if the submissions consist of more than one file). For example, a full file name in the submission directory might look like

```
/dropbox/COMPSCI.101/A2/astud001/MyFirstJavaProgram.java
```

Of particular importance here is the presence of the student user name in the file path. Aropä is able to automatically extract an author list from this directory, thus ensuring that only the students who submit the assignment are included as reviewers. It is also possible to specify a separate list of reviewers, but this is a useful default.

With the above example, the submission directory to enter is

```
/dropbox/COMPSCI.101/A2/⟨⟨author⟩⟩
```

The `⟨⟨author⟩⟩` keyword tells Aropä where to find the student user names. Other variations are supported. Any text before or after the `⟨⟨author⟩⟩` keyword is matched literally, so

```
/dropbox/COMPSCI.101/A2/upi-⟨⟨author⟩⟩.dir
```

will find the author names “astu001” and “bstu001” in a directory containing, say, the files

```
some-other-file
upi-astu001.dir
ignore-this.dir
upi-bstu001.dir
```

The `<<author>>` does not have to be a directory. If the assignment requires students to submit a single file, and each file name contains the student’s user name, then the submission directory might look like

```
/dropbox/COMPSCI.101/A2/<<author>>.txt
```

The directory path can also be extended beyond the `<<author>>` keyword. E.g.,

```
/dropbox/COMPSCI.101/A2/<<author>>/Files/
```

With this specification, only the contents of the `Files` subdirectory will be shown to the reviewers. Other files or subdirectories below the author will be ignored.

Some electronic submission systems allow students to re-submit their assignment, and retain and date all submissions. Aropã provides some support for such environments with a `<<latest>>` keyword. This matches the last directory entry. An example of its use is

```
/dropbox/COMPSCI.101/A2/<<author>>/Submission<<latest>>/Files/
```

This will direct the reviewer to the contents of the last (i.e., most recent) `Submission` subdirectory. This assumes the submission directories are numbered or dated in increasing order (and beware of systems that count “8”, “9”, “10” — the “10” will come before the “8”!).

Finally, Aropã may have been installed with some directory abbreviations, to make your job a little easier. For example, the keyword `<<dropbox>>` may expand to the root of the submissions directory. Other keywords might expand to particular courses. Check with your system administrator.

Note that the submission directory follows Unix file name syntax (i.e., use the forwards slash to separate directories), even when the server is running on a Windows platform. Also beware that the field will be case sensitive if the server is running under Unix.

3.4 Submission/ review/ feedback dates

The dates your peer assessment task is to run.

Aropã supports a flexible syntax for entering dates. You can write “tomorrow,” “this Thursday,” “Monday week,” etc. Each user has the

option of translating dates back into this relative format, or displaying dates in an absolute format. Dates can be left blank. A blank start date is genesis, and a blank end date the day of reckoning.

The submission dates should only be used if students are submitting files directly into Aropã (i.e., when the submission path is blank). Students can add or delete submissions any time in this interval, and can check their submissions at any time. If you set submission dates, you will also need to enter the class list using the “Upload Authors” command (see Section 3.11).

If you are using an external submission system, the review start will need to be a short while after the assignment is due, to give you time to generate the reviewer allocations. If your electronic submission system stores files in a location directly accessible to the Aropã server, then only a few minutes are needed. Otherwise, you will need to allow time to move files around and check everything is in order. There is no need for any gap if Aropã is used for submissions.

The review end date is when all reviewing stops (with the exception of students for whom you have granted an extension). Reviewing will need to stop sometime if you ever want to extract final grades.

The feedback dates determine when students will be able to read the comments from their reviewers, to possibly respond to those comments, and to rate the performance of their reviewers. There is no particular need to set an end date for the feedback period, other than to curtail ongoing review activity.

Review and feedback dates are largely independent. It makes no sense to start feedback before review starts (there would be no comments to read), but the other overlaps are all plausible.

Starting feedback (immediately) after the end of reviewing makes for two distinct phases. Reviewers will not be influenced by the comments they receive for their own work, and no dialogue will take place between author and reviewer.

Starting feedback and review together will allow authors to respond to comments made by reviewers, and gives reviewers the opportunity to change their grading in the light of that dialogue.

You may even find merit in delaying the feedback start or continuing review past the end of the feedback period.

The review and feedback process is discussed in more detail in Section 8. Only the reviewers’ comments are shown to the author. Individual marks are not disclosed.

3.5 Authors are reviewers?

Check this if they are, un-check it if not.

If they are, Aropã will not expect a separate reviewer list when generating the allocations, and will use the author list.

You will need to say “no” here if you want to allow students enrolled in the class but who did not submit an assignment to participate in the peer assessment.

This field is ignored (i.e., treated as “no”) if $1 - n$ or $n - 1$ groups are used (see Section 3.7).

3.6 Self review?

Check this if you would like your authors to review their own submissions. Some people think this is a good idea, others don't.

3.7 Groups

Aropä supports both group assignment work and group review.

The default is “individual authors, individual reviews” ($1 - 1$). This is probably the right default for large introductory courses, where students may not yet know each other well enough to work in groups. However, group reviews can greatly improve the quality of the assessment task by having students debate their views with other members of the team.

If you choose a group option ($1 - n$, $n - 1$ or $n - n$), you will need to enter the group membership using **Edit Groups** before opening the **Allocate** page. This is because all review and feedback is performed by individually authenticated students. There is no “group” login facility. Each comment and reply is recorded against an individual user name, not the group name (although user names are usually anonymised).

With $n - n$ groups, it is usual (but not required) for the author groups and reviewer groups to have the same members (i.e., set the “Authors are reviewers” flag). If they are not, Aropä may have difficulty in automatically generating allocations, since an allocation between groups with even one member in common is considered self-review.

The group names have no significance outside the assignment. Thus, you can use the user name of the student who submits the assignment as the group name. This may help coordinate things with your electronic submission system.

3.8 Grading rubric

Arguably the most important field of all, this is the form the reviewers will see when marking a submission. The form is specified in a “WIKI mark-up,” using the conventions (and some underlying code) from PHP-Wiki [3].

PHP-Wiki mark-up is divided into *block elements* and *in-line elements*. Block elements are identified first, and are matched against

a whole line. Successive block elements may be merged together, depending on their types. In-line elements are identified last, and match parts of a line. No merging is performed.

The block elements are shown in Figure 1, and the in-line elements in Figure 2.

Aropã adds three special in-line elements, each delimited by curly braces. An element of the form `{code=n}` inserts a radio button for the input group *code*. The button will return the value *n* if selected. *Code* can be omitted, in which case it defaults to the previous code or to the first word in the preceding heading.

An element of the form `{code*n}` inserts a check-box for the input group *code*. Again, *code* is optional and defaults in the same way.

Check-boxes differ from radio buttons in that any number of check boxes can be selected for the same group, while only one radio button in a group can be selected. Radio groups are used for grade calculations, and so should always be given numeric values. The value for a check-boxes should be a descriptive word.

The final Aropã element is a text area for comments, which has the form `{-text-}`. The input group for a comment always defaults to the previous code. If the comment box is being added at the end of a question group, then this will be the correct default. However, the input group can be specified directly, using the (degenerate) `{code}` element.

The comment group names are displayed to students during the feedback phase, so they should be descriptive.

Here is an extract from a general report rubric on that shows off many of the main elements:

```
!! General instructions
* Download the report onto your local directory,
  and name the file with the allocation number
* Skim the report quickly, read the rubric, then
  carefully read the report more with the rubric
  questions in mind.
...
```

```
!! Checklist
Check which of the following are present
```

```
{*Title} |
  A title page
{*Abstract} |
  Abstract
{*Stmt} |
  Statement of originality
{*TOC} |
  Table of contents
```

```

{*ACK} |
    Acknowledgments
{*Refs} |
    References

!! Clarity (whole report)

{=1} Inadequate:
    There appears to be no organization of the
    report contents.
{=2} Needs Improvement:
    Organization of the report is difficult to
    follow, due to a combination of the following
    * Inadequate transitions
    * Rambling format
    ...

{-Provide one or more extracts from the report
to justify your mark-}

```

The extract starts with a heading with a list of general instructions. This is followed by a check-list. The code for each of the items in this list is “Checklist.” The reviewer will be able to select any number of these items. The first grading question follows in the “Clarity” section. Only two radio buttons are shown. The first will return the value 1 if selected, the second 2, etc.

The values in a grading question can be numeric (as in the example) or symbolic. If all values are numeric, the grade calculation will compute fractional grades. Otherwise (i.e., if any value is non-numeric) the averaging process will select the closest grade.

The radio buttons are implicitly in the same group, and will continue to be so until the next heading (of any level) or an explicit code is given. The section ends with a comment box which will adopt the same group code. Aropã does not connect the comment and radio groups in any way; it is simply convenient not to have to invent a new group code for the comment. Likewise, check-boxes can share the same group code with comments or radio groups if desired.

3.9 Anonymous review?

Most peer assessment tasks are performed double-blind, so neither the reviewer nor the author know each other’s identity. Sometimes this is a nonsense, such as when the author’s identity cannot be kept secret from the reviewer. If this flag is checked, the name of the author will be included in the list of allocations shown to the reviewer.

!, !!, !!!	Headings (more ! means larger)
----	Creates a horizontal line
*	An item in a bulleted list
#	Starts or continues a numbered list
:	Starts or continues a descriptive list. The text before the : is the description for this item.
	Starts or continues a table
<pre>	Starts a pre-formatted (literal) block, which ends with a line starting </pre>. The tag <verbatim> can also be used.

Figure 1: Block mark-up elements

<i>*text*</i>	The text is set in bold
=text=	The text is set in typewriter font
<i>_text_</i>	The text is set in italics

The following HTML tags are also supported, although both the start and end tags must be on the same line.

b	big	i	small	tt
em	strong	cite	code	dfn
kbd	samp	var	sup	sub

Figure 2: In-line mark-up elements

3.10 Editing an assignment

The **Edit** page differs from **New** only in the presence of an “is active” check-box. Assignments are created inactive, to hide them from students until they are fully configured. Once everything is in order, you should edit the new assignment and check this flag. The flag can be unchecked at any time, although this is normally only done after the end of the course.

If an inactive assignment is edited, a “delete” link appears at the bottom of the **Edit** page. Deleting old assignments may free up a small amount of space on the database server, and will prevent last year’s assignments from being mistaken from this year’s.

3.11 Upload authors

This page is used for assignments that use Aropä’s built-in submission system; the button is not visible if a submission path is set.

Each line consists of an author (or group name). These are the names of the students permitted to upload files for the assignment (i.e., your class roll).

3.12 Download uploads

Use this page to create a ZIP archive of all submissions that have been uploaded into Aropä. Useful if you like to have all the submitted material together.

The zip file is always named `submissions.zip`, and contains a comment with the assignment name and date.

3.13 Groups

The **Edit groups** page is available when the selected assignment uses reviewer or author groups. Enter the group name followed by the members of the group. If the members are too numerous to fit neatly on one line, the line can be split and the new line prefixed again with the group name.

3.14 Time on task

This page generates a report showing the time spent reviewing by each reviewer. A chart is provided to indicate when review activity took place, and to allow you to observe patterns of review activity. The chart can be omitted if all you want is the approximate total time spent reviewing by each student.

The activity chart and total times are only approximate because not all reviewing activity involves interaction with the system. For example, a reviewer may spend just a few minutes downloading all the submissions and then several hours reading them away from the computer. Only the few minutes spent downloading will be recorded.

To further cloud the issue, the reported times are for *any* activity during the assignment review period. If several assignments are concurrently active, the activity times will be reported for each.

4 Allocations

Generates an set of allocation records. Allocations are the units of work assigned to reviewers for reviewing. Each record is initialised with the name of the reviewer (or review group) and the name of the author (or author group), and is used to store the marks assigned by the reviewer and the rating given by the author. Date fields record when it was last viewed and marked by the reviewer, and the date of the last response from the author. A tag field is used to group related allocations.

The allocations can be checked before saving, and can always be re-generated. This is possible even after the review period has started, which makes it relatively easy to incorporate students who submit work late (assuming sufficient students start reviewing late also). The re-generation algorithm is careful not to change any allocations that have been viewed, so reviewers who start early should not have any surprises².

Allocations can be specified manually, or generated automatically (or some combination of both).

4.1 Manual allocation

For manual allocation, follow the link on the **Allocate** page. A page will appear with a text area for entering the allocations. These are usually entered by reviewer, so each line is of the form $r a_1 a_2 \dots$, where r is the name of a reviewer and a_i are author names. An option is available if you wish to enter the allocations by author, in which case the lines will be of the form $a r_1 r_2 \dots$. There is no checking of manual allocations, other than to silently ignore duplicate entries.

The text area will be primed with any existing allocations. These can be cleared before entering the new allocations, but if the review period has started any allocations that have been viewed will remain intact.

²Except in pathological cases. A reviewer who has a web page open when the allocations are re-generated may end up with fewer allocations than she started with, but this combination of events is very unlikely.

4.2 Automatic allocation

Automatic allocation requires a list of submission authors, a list of reviewers, and either the number of reviewers per submission or the number of reviews for each reviewer. An optional tag can be specified, which identifies related groups of allocation records and allows them to be re-generated.

The submission authors field is initialised with all the author names (including any found on the assignment submission path; see Section 3.3). You can edit this list to add or remove authors.

If the reviews are also authors, then reviewers list will be initialised with the same names.

4.3 View allocations

Once allocations have been generated, they can be viewed through the **View Allocations** page. This displays a table of allocations, organised either by reviewer (showing the reviews allocated to each reviewer) or by submission (showing the reviewers who will mark that submission). A link is provided at the top of the page to switch between the two views.

Entries in the table are links that display details of the reviewing and feedback. There are three different display pages. One showing all the reviews by a reviewer (the reviewer view), one showing all the reviews of a given submission (the submission view), and one showing just the details of a particular allocation (the allocation view).

In each view, marks are shown for each item code. Since the item codes can be quite long and numerous, an abbreviated code is used instead. A legend of abbreviations appears at the bottom of the detail page.

4.4 Reviewer view

In the reviewer view, each row starts with the name of a reviewer. This name links to details of the reviewer's allocations. This details page includes: links to download the submitted files; the marks awarded in each review; and a table of all comments and mark changes.

The comments table shows the item code (which is blank for mark change entries), the name of the individual who made the comment, and the submission author to which the comment relates. The table can be sorted on any of its columns by clicking on the column header.

4.5 Submission view

When allocations are viewed by submission, each row starts with the name of an author. This name links to a page with details from all the

reviewers for that submission. This page includes: links to download the submitted files; the marks awarded by each reviewer; and a table of all comments and mark changes.

The comments table shows the item code (which is blank for mark change entries), the name of the individual who made the comment, and the reviewer to which the comment relates. The table can be sorted on any of its columns by clicking on the column header.

4.6 Allocation view

Names in the middle of the allocations table link to a page of details about the particular allocation (except that the link is omitted when the allocation has not yet been viewed). The content is a subset of both the reviewer and submission views.

5 Calculate grades

A note on terminology: we use the term “mark” to refer to the judgements made by individual reviewers, and “grade” for marks averaged across all reviewers.

This page displays the *weighted average* grades for each submission. Weighted averages take into account the relative grading performance of individual reviewers. A reviewer who is consistently in agreement with the marks assigned by other students is given a high weighting, while reviewers whose marks show a large variance are weighted lowly. Details of the algorithm can be found in [1].

Weighted averages are calculated for each radio-type rubric question, and summed to give the assignment total. The number of reviews available for the assignment is also shown. Grades for assignments with few reviews may be unreliable.

The item legend shows which items are calculated using the discrete scale, and which are calculated using a continuous scale. Items with at least one non-numeric value are always discrete. Items with numeric values including at least one floating point number are always continuous. Items with only integer values can be set to either discrete or continuous by selecting the appropriate check box and recalculating. Discrete scales are appropriate for questions that have one “correct” value that you might expect to arrive at through a consensus process. Continuous scales are appropriate for questions that admit degrees of interpretation. You can easily experiment with different settings.

The calculated grades are shown in a table; follow the link to download a spreadsheet (in CSV-format).

Most of the interesting things can be done with the data in table form. Clicking on a column heading sorts the table on that column.

Clicking again reverses the sort order³. The author names are also links, connecting to a page that displays all the marks awarded by each reviewer. Reviewers whose marks are at variance with the majority can be identified. Their names link to a reviewer performance page that shows a table comparing all of their marking to the weighted averages, with anomalies highlighted in red.

The reviewer performance pages are also available from the main grade calculation page. Below the grade table is a list of reviewers and the final weightings used in the grade calculation. It is possible to use the reviewer weights as a summative component, thus providing an external incentive to students to take the marking seriously. Weights typically fall in the range 0.2 to 3 (although variations on the grade calculation algorithm may truncate low weights to zero), and are only coarsely indicative of reviewer performance. Care should be taken in converting these numbers into a grade.

6 Reviewing the reviewers

Any assignment can have a “rating review” in which the reviewer comments are evaluated and feedback provided on reviewing performance. A rating review is in most respects just another assignment, with its own set of review and feedback dates, rubric, allocations and grades.

To create a rating review, select an existing assignment and open the **Create rating review** page. The rating review edit page is similar to the assignment edit page. However, no submission details are needed. Currently, anonymous rating review is not supported.

7 Managing reviewers

7.1 Login as reviewer

Lecturers often find it convenient to view the system through the eyes of a student. The **Login as reviewer** page lets you take on the (simultaneous) identity of any student, without requiring their password.

Once logged on as a reviewer, the **Main Menu** page reverts to the students' main menu (the lecturers' main menu is still available under **List**). The **Change Password** page also turns to **Change Reviewer Password**.

³Beware here, and elsewhere, the surprises that await the “reload” and “back” buttons of your browser. Reloading or returning to an earlier page will often reverse the sort order!

7.2 Change password, change reviewer password

Aropă relies on an external authentication system, such as LDAP or IMAP, to validate users. Once validated, Aropă stores an encrypted copy of the user's password in a database table. This is mainly intended to provide a fall-back mechanism against occasional outages. If the LDAP or IMAP server is out of action, a user who has previously used Aropă may still be able to login. This all happens automatically and invisibly.

The **Change Password** and **Change Reviewer Password** pages give this password mechanism other uses. If for any reason a user does not want to use their normal password with Aropă, they can use **Change Password** set a separate password after they first login.

Change Reviewer Password can be used to repair a forgotten password, and also to create an account for a student who is not enrolled or is otherwise unable to be authenticated in the normal way. To do this, invent a user name, use it to **Login as Reviewer**, then set a password for the (fictitious) account. Such accounts have the same status in Aropă as any other, and may even be used for lecturer accounts.

8 The student interface

A student plays several roles when using Aropă. First, as an author she prepares the assignments submissions. Next, as reviewer she reads his allocated submissions, assigns marks and writes comments. After the assignment is complete, she could be asked to assess the quality of some of the reviews written by other students.

At any one time, a student may have any number of active assignments. If there is more than one, they are listed at the top of the main menu page. Next to each assignment is a check-box, and he is able to select a subset of the available assignments to focus attention on.

The next two sections of the main menu relate to the student-as-author. If the assignment submissions are to be uploaded directly into Aropă, a link to an upload page will appear. The files she has submitted for each (selected) assignment are listed for checking.

The third section lists the reviews allocated to the student, grouped by assignment. Allocations are either: "ready to mark," "back with comments," "ready to view," or "complete."

Any allocation can be viewed (or re-viewed) at any time. An allocation can only be marked (or re-marked) once it has been viewed. Normally, once an allocation has been marked it moves into the completed list. Completed allocations can still be re-marked. If the feedback period overlaps with the review period, the author will have an opportunity to respond to the reviewer comments. Allocations with an author's

response more recent than the last marking date are displayed in the “back with comments” list.

The final section has one entry for each assignment that is in its feedback period. The entry links to a feedback page, which displays the comments made by reviewers. A text area is provided next to each comment in which the author can write a response. When the reviewer re-marks the submission, these response will appear in the rubric form, above the comment area. Neither reviewers nor authors have the ability to remove a comment or response. All comments are accumulated, and are displayed in date order on the rubric form.

9 Frequently asked questions

Can I use Aropä when students submit hand-written assignments?

You will need to make copies somehow. Many modern photocopiers will scan documents very rapidly, generating image files that can be used directly by Aropä.

For assessing posters, seminars, or other “broadcast” works it may be sufficient to submit a simple note describing the submission (e.g., “See poster B3.”)

Are the reviewer weights accurate? The weights appear to be effective in reducing the influence of “rogue” reviewers (at least in some circumstances). However, the evidence we have collected to date shows that they are *not* significantly correlated with other measures of reviewing performance.

If rating review grades are available for an assignment, Aropä will use these grades as weights instead of the reviewer weights.

References

- [1] John Hamer, Kenneth T.K. Ma, and Hugh H.F. Kwong. A method of automatic grade calibration in peer assessment. In Alison Young and Denise Tolhurst, editors, *ACE'05 Australasian Computer Society Education Conference*, pages 67–72, 2005.
- [2] MySQL AB. MySQL home page. <http://www.mysql.com/>, Accessed February 2005.
- [3] PHP-Wiki Team. PHP Wiki home page. <http://phpwiki.sourceforge.net/phpwiki/>, Accessed February 2005.
- [4] PHP.Net. PHP home page. <http://www.php.net/>, Accessed February 2005.