Using WEKA classifiers in your java program

Session 1

EASY START

With Eclipse



New java project

| | New | Alt+Shift+N ▶ | 惨 | Java Project | |
|---|---|---------------|----------|--------------------|--------|
| | Open File | | Û | Project | |
| | Close | Ctrl+W | ₿ | Package | |
| | Close All | Ctrl+Shift+W | C | Class | |
| | Save | Ctrl+S | œ | Interface | |
| | Save As | | G | Enum | |
| R | Save All | Ctrl+Shift+S | @ | Annotation | |
| | Revert | | ₽° | Source Folder | |
| | Move | | 19 A | Java Working Set | |
| | Rename | | | Folder | |
| 8 | Refresh | F5 | | File | |
| | Convert Line Delimiters To | + | | Untitled Text File | |
| A | Drint | Chilly D | ⊫ | Tack | |
| | Print | Ctil+P | | TUSK | |
| | Switch Workspace | • | Ľ | Example | |
| | Restart | | C2 | Other | Ctrl+N |
| 2 | Import | | | | prot |
| 4 | Export | | L . | | /** |
| | Properties | Alt+Enter | L . | | prot |
| | 1 Wels Dama in a DVEKA classifier (con) | | | | /** |
| | 2 Sendet Hilities inva [TEST2/crc/] | | L | | proc |
| | 2 Service Utilities java [test_app/] | | L | | /** |
| | 4 HelloWorld iava [TEST2/src/tools] | | L | | proc |
| | | | L | | /** |

| New Java Project | | | | | |
|--|--------------------------------|-------------------|--|--|--|
| Create a Java Project Create a Java project in the workspa | ce or in an external location. | | | | |
| Project name: Classifier | | | | | |
| Vse <u>d</u> efault location | | | | | |
| Location: C:\web\Classifier | | B <u>r</u> owse | | | |
| JRE | | | | | |
| Ose an execution environment | t JRE: JavaSE-1.7 | • | | | |
| Use a project specific JRE: | jre7 | - | | | |
| Use def <u>a</u> ult JRE (currently 'jre7 | ") | Configure JREs | | | |
| Project layout Use project folder as root for sources and class files <u>C</u> reate separate folders for sources and class files | | | | | |
| Working sets | | | | | |
| Add projec <u>t</u> to working sets | | | | | |
| Working sets: | | ▼ S <u>e</u> lect | | | |
| | | | | | |
| (?) < <u>B</u> ack | <u>N</u> ext > <u>F</u> ir | nish Cancel | | | |

Project name

Add WEKA library

| New Java Project | | | | | |
|---|------|--|---|---|-------------------|
| Java Settings Define the Java build settings. | | | | | |
| Ø Source 	→ Projects 	→ Libraries 	→ Order and | Ехро | ort | | | |
| JRE System Library [JavaSE-1.7] | | Add <u>J</u> ARs Add E <u>x</u> ternal JARs Add <u>V</u> ariable | | | |
| JAR Selection Organize ▼ New folder | | | | | |
| ★ Favorites ■ Desktop ● Downloads ● Recent Places | • | Name changelogs data doc models | Date modified 11/12/2011 12:44 1/14/2012 5:33 AM 11/12/2011 12:44 1/21/2012 5:28 AM | Type File folder File folder File folder File folder | Size |
| □ Libraries □ Documents □ Music □ Pictures □ Videos | Ш | remoteExperimentServer.jar weka.jar weka-src.jar | 10/27/2011 5:59 PM 10/27/2011 5:59 PM 10/27/2011 5:59 PM | Executable Jar File Executable Jar File Executable Jar File | 3 6,31 6,20 |

Add Weka Demo

- Add new class "WekaDemo"
- Copy and paste attached code in WekaDemo.java
- Save
- Copy your input file into project folder

Set program parameters

| | | er/src/wekaDe | mo.java - Eclipse |
|---|--|---------------|---|
| | | Refactor Navi | gate Search Project Run Window Help |
| | | ☆▼ | 0 - 94 - 🖶 6 - 🤌 🗁 🛷 - 🖗 🍠 - |
| | | X | 🗊 1 WekaDemo 🗊 🕡 We |
| | | | 🗄 2 Tomcat v7.0 Server at localhost 🛛 🕞 i |
| Run Configurations | X | 1 | Run As ▶ i |
| Create, manage, and run confi | igurations | 2 | Run Configurations |
| Run a Java application | | | Organize Favorites |
| [] 🗎 🗙 📄 🐡 ▾ | Name: WekaDemo | t package) | |
| type filter text | 🕝 Main 🕪 Arguments 🛛 🚔 JRE 🍫 Classpath 🤯 Source 🖉 Environment 🔲 <u>C</u> ommon | | |
| 🗄 Apache Tomcat | Program <u>a</u> rguments: | | |
| Eclipse Application | CLASSIFIER weka.classifiers.trees.J48 -U FILTER weka.filters.unsupervised.instance.Randomize A DATASET contact-lenses.arff | | |
| Generic Server Generic Server(External I | • | | |
| HTTP Preview | Varjables | | Unpruned tree |
| J2EE Preview | VM arguments: | | |
| Java Application | A | | 1 |
| Ju JUnit | * | CLASS | SIFIER weka.classifiers.trees.J48 -U |
| ⊕ OSGi Framework | Variables | FILT | ER |
| Jy Task Context Test → XSL | Working directory: | | |
| | Default: S{workspace_loc:WEKA classifier} | weka. | filters.unsupervised.instance.Ran |
| | © Ot <u>h</u> er: | domiz | |
| | Workspace Eile System Variables | uomiz | .C |
| | | DAT | ASET contact-lenses.arff |
| Filter matched 16 of 16 items | Apply Revert | | |
| ? | Run Close | | |

Program output

| | Correctly Classified Instances 17 70.8333 % | | | |
|--|---|--|--|--|
| | Incorrectly Classified Instances 7 29.1667 % | | | |
| Weka - Demo | Kappa statistic 0.4381 | | | |
| ======= | Mean absolute error 0.2167 | | | |
| sifier : weka classifiers trees 148 -11 -M 2 | Root mean squared error 0.446 | | | |
| Filter: weka.filters.unsupervised.instance.Randomize -S 42 | Relative absolute error 57.3529 % | | | |
| Training file: contact-lenses.arff | Root relative squared error 102.1123 % | | | |
| | Total Number of Instances 24 | | | |
| J48 unpruned tree | | | | |
| | === Confusion Matrix === | | | |
| tear-prod-rate = reduced: none (12.0) | a b c < classified as | | | |
| tear-prod-rate = normal | 4 0 1 a = soft | | | |
| astigmatism = no: soft (6.0/1.0) | 0 1 3 b = hard | | | |
| astigmatism = yes | 1 2 12 c = none | | | |
| spectacle-prescrip = myope: hard (3.0) | | | | |
| spectacle-prescrip = hypermetrope: none (3.0/1.0) | === Detailed Accuracy By Class === | | | |
| nber of Leaves : 4 | TP Rate FP Rate Precision Recall F-Measure ROC Area Class | | | |
| | 0.8 0.053 0.8 0.8 0.8 0.853 soft | | | |
| Size of the tree : 7 | 0.25 0.1 0.333 0.25 0.286 0.575 hard | | | |
| | 0.8 0.444 0.75 0.8 0.774 0.633 none | | | |
| | Weighted Avg. 0.708 0.305 0.691 0.708 0.698 0.669 | | | |

Writing your own classification program

- 1. Convert you training set into arff format
- 2. Convert the data you want to classify into arff format
- 3. Sample code is in file WekaClassify.java
- 4. The program takes two arguments: the training file name and the name of the file with new instances to be classified

Sample program arguments: contact-lenses.arff newinstances.arff

COMMAND LINE USAGE

Compile jour java code

javac -classpath /path/to/weka.jar WekaDemo.java javac -classpath /path/to/weka.jar WekaClassify.java

Run your code

java -classpath .; /path/to/weka.jar WekaClassify contact-lenses.arff newinstances.arff

To increase java heap size:

java -Xmx1G -cp /path/to/weka.jar WekaClassify contact-lenses.arff newinstances.arff