A Context Prediction Code and Data Base

20. April 2004, Vienna

Workshop on Benchmarks and a database for context recognition

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Current Data Format

- ASCII based
  - semicolon separated list of features for each sample step, one line per sample step
  - XML based meta data (e.g. mapping, min/max values)
- Support for heterogeneous data types (numerical discrete/continuous, ordinal, nominal, binary, sets)

```
[init]Time.Timestamp;ActiveWindow.ActiveWindow;
    Audio.Mean;Audio.Peaks;Audio.Band.0;Audio.Band.1;
    Power.Plugged;Wlan.ActiveEssid;Wlan.ActiveMode;
    Wlan.ActiveSignalLevel;Wlan.ActiveMacAddress;
    Wlan.Peers;Wlan.NumPeers;GSM.CellID;
1068993793;0;35.12744140624988600;
    0.00000000000000000;115.05078125000006000;
    112.98437500000001000;1;0;2;0.62000000000000000;
    0;100;1.00000000000000000;[missing];
1068993824;1;0.08825171921780387;
    249.00000000000000000;-1.51129771706587120;
    0.69374532185629911;1;0;2;0.63000000000000000;
    0;1000;1.00000000000000000;[missing];
```

```xml
<log>
  <sample timestamp="1068993793">
    <feature id="ActiveWindow.ActiveWindow">0</feature>
    <feature
        id="Audio.Mean">35.12744140624988600</feature>
    <feature
        id="Audio.Peaks">0.00000000000000000</feature>
    <feature
        id="Audio.Band.0">115.05078125000006000</feature>
    <feature
        id="Audio.Band.1">112.98437500000001000</feature>
    <feature id="Power.Plugged">1</feature>
    <feature id="Wlan.ActiveEssid">0</feature>
    <feature id="Wlan.ActiveMode">2</feature>
    <feature
        id="Wlan.ActiveSignalLevel">0.62000000000000000</fe
        ature>
    <feature id="Wlan.ActiveMacAddress">0</feature>
    <feature id="Wlan.Peers">100</feature>
    <feature
        id="Wlan.NumPeers">1.00000000000000000</feature>
  </sample>
  ....
```

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Current Data Format (2)

Persistent data

- Currently specific to each feature type
- Only interpreted by features, arbitrary elements, structures and data formats possible (as long as they are expressed as strings)
- Advantage of different file: can be updated independently

```
<persistent>
 <feature id="ActiveWindow.ActiveWindow">
   <element id="0"><![CDATA[cmd.exe]]></element>
   <element id="1"><![CDATA[trillian.exe]]></element>
   <element id="10"><![CDATA[EXCEL.EXE]]></element>
   <element id="93"><![CDATA[uninst.exe]]></element>
 </feature>
 <feature id="Audio.Mean">
   <element
     id="maxval"><![CDATA[153.30539772726931000]]></element>
   <element
     id="minval"><![CDATA[0.00000000000000000]]></element>
 </feature>
 <feature id="Audio.Peaks">
   <element id="maxval"><![CDATA[856]]></element>
   <element id="minval"><![CDATA[0]]></element>
 </feature>
 <feature id="Wlan.ActiveEssid">
   <element id="0"><![CDATA[nme]]></element>
   <element id="1"><![CDATA[]]></element>
   <element id="10"><[CDATA[]]></element>
   <element id="2"><![CDATA[universe]]></element>
   <element id="3"><![CDATA[]]></element>
 </feature>
</persistent>
```

Lessons Learned

A format should be:

- Simple to use
- Self contained
- Open

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Proposal for exchanging data sets and methods

- FTP server might not be enough, description of data sets might be necessary
- Proposal: use publicly accessible and modifiable Wiki

$\Rightarrow$ http://pervasive.soft.uni-linz.ac.at/context-database/

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Thank you for your attention !

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