INFO: OMR Mark Detection Basics

Starting with version 9.0 DotImage released a new add-on to perform forms processing and OMR (Optical Mark Recognition). This article will guide you through the steps of making an OMR application using our libraries.

Template Creation

OmrTemplateDocument Creation

The first step to be able to recognize marks on a form is to create a template file. Typically, using the cleanest possible blank form image is optimum for creating a template. In the following code snippet a single page OmrTemplateDocument object will be created and saved off to disk for later usage:

C#

```
nternal static void BuildTemplate(string FileName, string OutFileName) { OmrTemplateDocument doc = new OmrTemplateDocument(); OmrTemplatePage page = MakePage(new AtalaImage(FileName)); doc.Pages.Add(page); SaveFileDialog save = new SaveFileDialog(); save.ShowDialog(); using (Stream s = save.OpenFile()) { doc.Save(s); } }
```

VB.NET

```
riend Shared Sub BuildTemplate(FileName As String, OutFileName As String) Dim doc As New OmrTemplateDocument() Dim page As OmrTemplatePage = MakePage(New AtalaImage(FileName)) doc.Pages.Add(page) Dim save As New SaveFileDialog() save.ShowDialog() Using s As Stream = save.OpenFile() doc.Save(s) End Using End Sub
```

OmrTemplatePage Creation

Each OmrTemplatePage object is made up of an AtalaImage and any number of groups which in turn have any number of marks. Marks are defined in pixel space of the AtalaImage provided to create the OmrTemplatePage. In the example below a single mark area will be checked for marks at the coordinates (595,590) with a size of (50,50).

C#

```
rivate static OmrTemplatePage MakePage(AtalaImage img) { OmrTemplatePage page = new
```

```
OmrTemplatePage(img); OmrTemplateGroup group = new OmrTemplateGroup("Group 1");
group.Marks.Add(new OmrTemplateMark("Mark 1", new System.Drawing.Rectangle(595,590,50,50)));
page.Groups.Add(group); return page; }
```

VB.NET

```
rivate Shared Function MakePage(img As AtalaImage) As OmrTemplatePage Dim page As New
OmrTemplatePage(img) Dim group As New OmrTemplateGroup("Group 1") group.Marks.Add(New
OmrTemplateMark("Mark 1", New System.Drawing.Rectangle(595, 590, 50, 50)))
page.Groups.Add(group) Return page End Function
```

OmrEngineProcessing

Once there is a OmrTemplateDocument saved to disk, the engine is ready to be configured for use. Loading the OmrTemplateDocument and the AtalaImages into the engine is the last step to get the results back from the engine.

C#

```
rivate void ProcessDocument(string TemplateFileName, string ImageFileName) {
OmrTemplateDocument ActiveTemplate = OmrTemplateDocument.Load(TemplateFileName); OmrEngine
engine = new OmrEngine(); OmrDocument result = engine.RecognizeDocument(new
FileSystemImageSource(ImageFileName, true), ActiveTemplate); OmrPage page = result.Pages[0];
ParsePage(page); }
```

VB.NET

```
rivate Sub ProcessDocument(TemplateFileName As String, ImageFileName As String) Dim
ActiveTemplate As OmrTemplateDocument = OmrTemplateDocument.Load(TemplateFileName) Dim engine
As New OmrEngine() Dim result As OmrDocument = engine.RecognizeDocument(New
FileSystemImageSource(ImageFileName, True), ActiveTemplate) Dim page As OmrPage =
result.Pages(0) ParsePage(page) End Sub
```

To get relevant information out of the OmrPage object simply parse out the valuable information of its collections. The following sample records all the marked fields to a display:

C#

```
rivate void ParsePage(OmrPage page) { foreach (OmrGroup g in page.Groups) { foreach (OmrMark
```

```
m in g.Marks) if (m.IsMarked) AddResultToDisplay(g.Template.Name + " " + m.Template.Name);
else AddResultToDisplay("NOTMARKED: " + g.Template.Name + " " + m.Template.Name + " @ " +
m.Template.Rectangle.ToString()); } }
```

VB.NET

```
rivate Sub ParsePage(page As OmrPage) For Each g As OmrGroup In page.Groups For Each m As
OmrMark In g.Marks If m.IsMarked Then AddResultToDisplay(g.Template.Name + " " +
m.Template.Name) Else AddResultToDisplay(("NOTMARKED: " + g.Template.Name & " ") +
m.Template.Name & " @ " & m.Template.Rectangle.ToString()) End If Next Next End Sub
```

Additional Articles / Resources

[INFO: Getting Started with Optical Mark Recognition (OMR) / Forms Processing]

Original Article:

Q10320 - INFO: Mark Detection Basics

Atalasoft Knowledge Base
https://www.atalasoft.com/kb2/KB/50158/INFO-OMR-Mark-Detection-Basics