The Universe of Fonts, Charted by Machine

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Drowning in Fonts ...

<table>
<thead>
<tr>
<th>Font Name</th>
<th>Style</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aa</td>
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<td>Xx</td>
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<td>Yy</td>
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<tr>
<td>Zz</td>
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</tbody>
</table>

*Note: The table is limited to the fonts visible in the image. Additional fonts may be present.*
A Map of 2000 Fonts
Multimedia Information Retrieval

Images:
Find all photos of Big Ben

Video:
Find all Hula dancing
Multimedia Information Retrieval

SoundTorch

Music: Cluster by genre/timbre

Overall sound, no subtle understanding needed (nor viable?)

Carry this over to fonts!
Inspiration from Music Information Retrieval

Raw Content Data → Simple, but many Perception-based Feature Descriptors → Machine Learning

Machine Learning → Clustering

Machine Learning → Classification
Related Work
Concerning Fonts

• Font management and printout software

• Databases utilizing manual classification: Type Navigator, Typedia

• Automated font analysis (e.g., by Roger D. Hersch et al.)

• Optical font recognition: FyFont, WhatTheFont
Some Low-Level Font Feature Descriptors

- Apparent Height
- Weight
- Roundness
- Slant
- Curvature
- Diagonalness
Some Low-Level Font Feature Descriptors

- Apparent Height
- Weight
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- Diagonalness

Height Histogram

95%
10%
Some Low-Level Font Feature Descriptors

- Apparent Height
- Weight
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- Slant
- Curvature
- Diagonalness

\[ \frac{\text{Area}}{\text{Circumference}^2} \]
Some Low-Level Font Feature Descriptors

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[Graph showing Entropy of Direction Histogram with angles 0° and 72°]
Some Low-Level Font Feature Descriptors

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Mean of Sine-Weighted Direction Histogram
Some Low-Level Font Feature Descriptors

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Some Low-Level Font Feature Descriptors

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Normalization

Average by Character Frequency

Value = Rank Order
Automated Charting

Self-Organizing Map

Normalize font size

Push piles apart
Outlook

- Replace font dialog/menu
- Train neural net to find pleasing font pairs
- Feed with fonts crawled from the Web
Thank you! www.j3L7h.de