



# MACHINE LEARNING AT BEER GOGGLES

beer GOGGLES

What's working (and what's not working so well)

WHEN A USER TAKES A PHOTO,  
THE APP SHOULD CHECK WHETHER  
THEY'RE IN A NATIONAL PARK...

SURE, EASY GIS LOOKUP.  
GIMME A FEW HOURS.

...AND CHECK WHETHER  
THE PHOTO IS OF A BIRD.

I'LL NEED A RESEARCH  
TEAM AND FIVE YEARS.



IN CS, IT CAN BE HARD TO EXPLAIN  
THE DIFFERENCE BETWEEN THE EASY  
AND THE VIRTUALLY IMPOSSIBLE.

ANYONE  
REMEMBER  
THIS XKCD?

**Section 1**

# **BACKGROUND**

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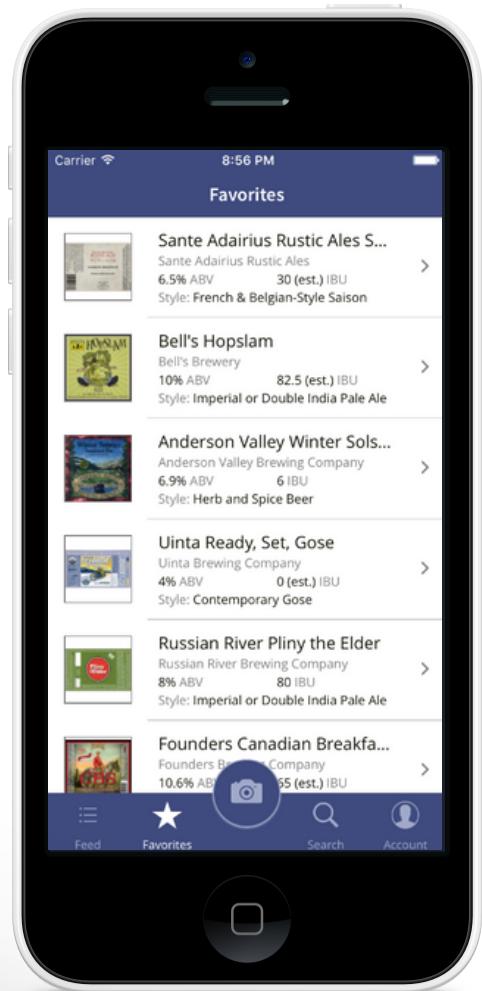
Github: [jwrubel](https://github.com/jwrubel)

Used to be:

- \* CTO at Think Through Math (acq. 2016)
- \* Technical Manager, Carnegie Mellon Software Engineering Institute



# BEER GOGGLES



[HTTPS://BEERGOGL.ES](https://beergoggl.es)

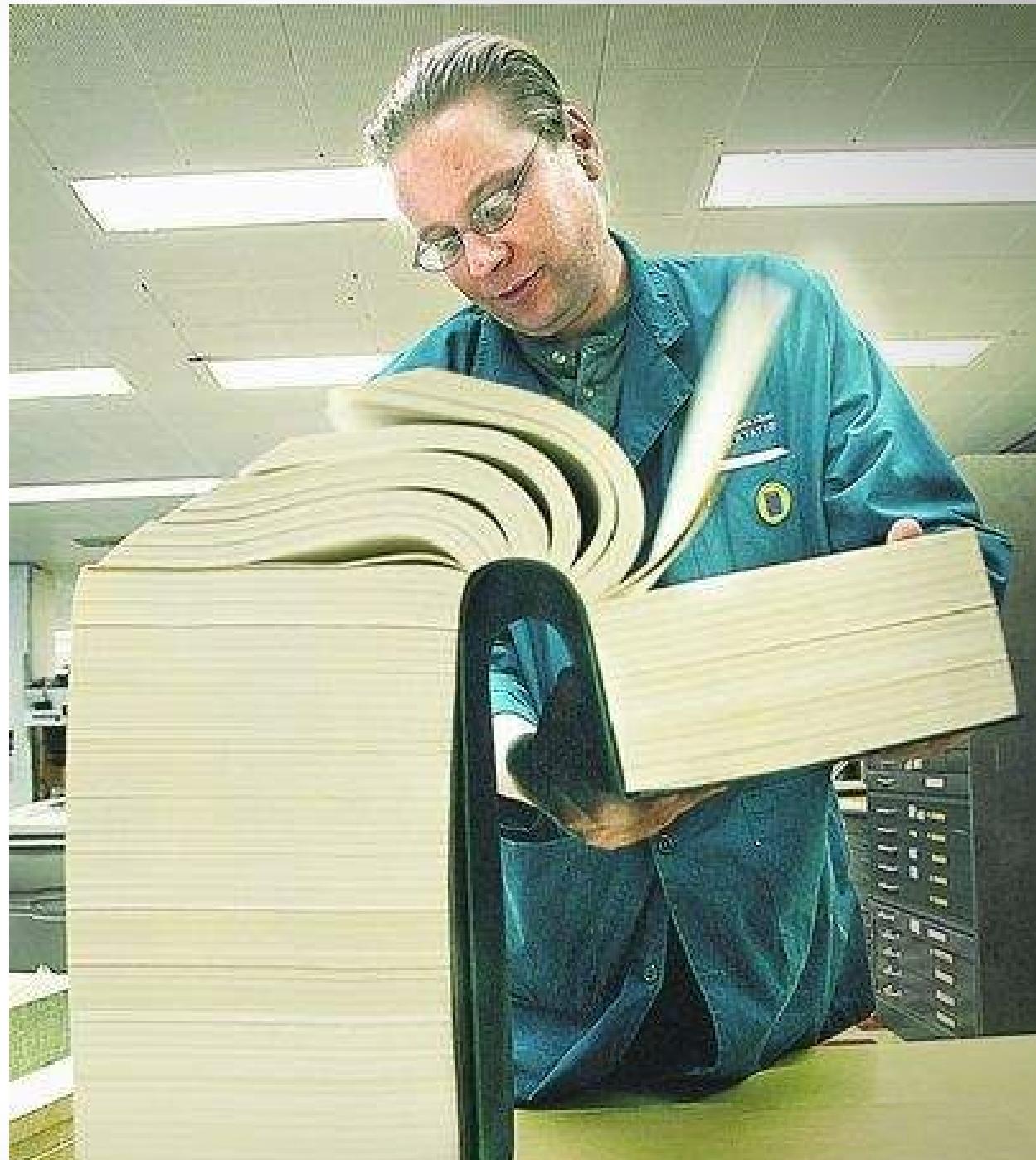


@\_BEERGOOGLES



**DEFINITELY NOT JUST A  
WAY TO DEDUCT BEER AS  
RESEARCH &  
DEVELOPMENT**

**WOULD  
YOU LIKE TO  
LOOK AT OUR  
TAP LIST?**





I can fix that.

WHEN A USER TAKES A PHOTO,  
THE APP SHOULD **detect all  
the text it finds.** ...  
SURE, EASY **OCR**  
GIMME A FEW HOURS.  
... AND **tell me**  
**which strings are beers.**  
I'LL NEED A RESEARCH  
TEAM AND FIVE YEARS.



IN CS, IT CAN BE HARD TO EXPLAIN  
THE DIFFERENCE BETWEEN THE EASY  
AND THE VIRTUALLY IMPOSSIBLE.

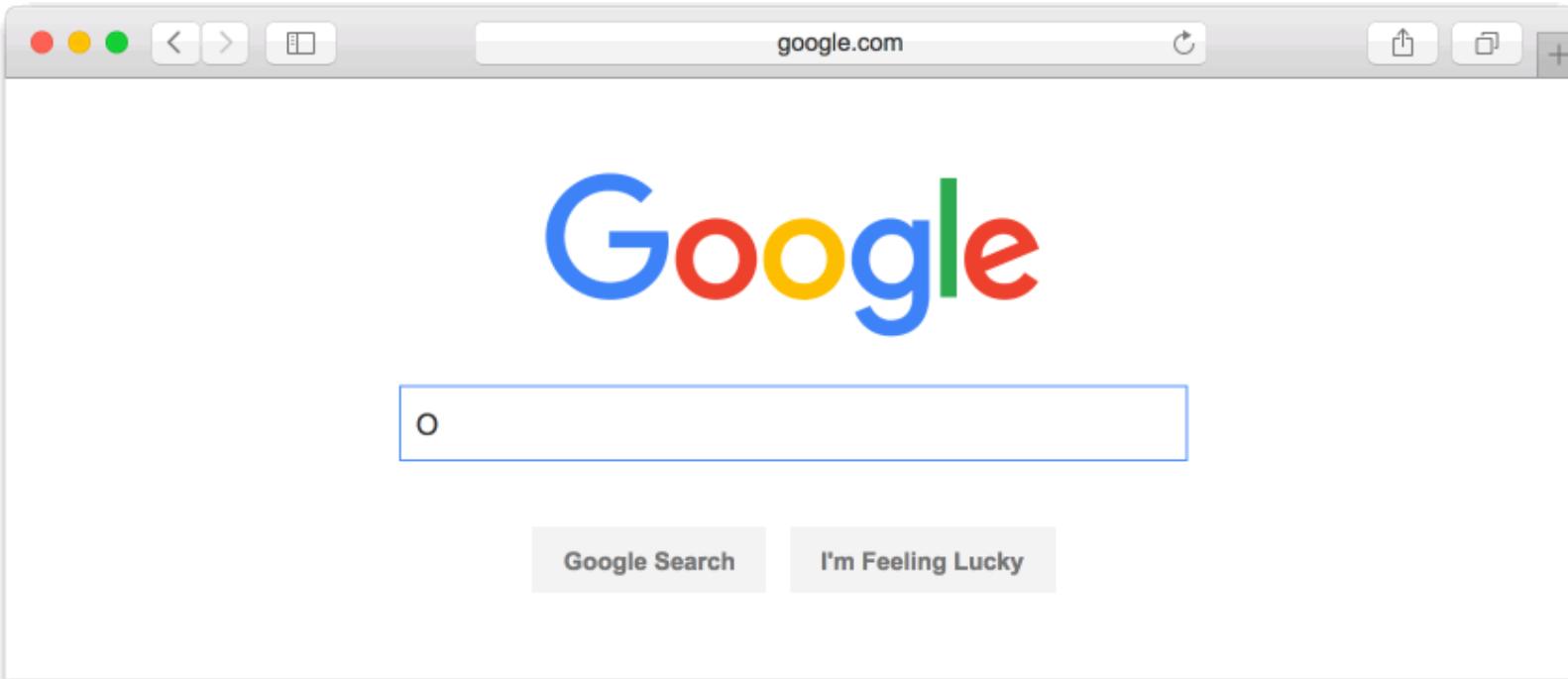
**“Life imitates art”**

-- Oscar Wilde

**Section 2**

**WHAT'S EASY**

# OKAY, SO... OCR



# TESSERACT?





**SEVERAL DAYS'  
WORTH OF  
CONFIGURATION  
LATER...**



## Six Packs To Go

Oskar Blues IPA \$13.75  
Oskar Blues Dale's Pale Ale \$13.75  
Oskar Blues Pinner Throwback IPA \$13.75  
Rivertowne RT Lager \$11.75  
Rivertowne Hala Kahiki Pineapple Beer \$13.25  
Tröegs Troegenator Doublebock \$11.50  
Brooklyn Lager \$13.50  
Jack's Hard Cider \$12.75  
Otter Creek Overgrown \$14.00  
Sly Fox Pikeland Pilsner \$12.50  
Terrapin Maggie's Peach Farmhouse Ale \$15.50  
Unita Ready Set Gose \$14.25  
North Country Bucco Blonde \$13.25  
North Country Firehouse Red Ale \$13.25  
Terrapin Hopsecutioner India Pale Ale \$15.50  
Epic Tarte & Juicy SOUR IPA \$15.50  
Bell's Roundhouse IRA \$15.50  
Sierra Nevada Pale Ale \$14.50  
Miller Lite 16oz. \$10.00  
Miller High Life 10oz \$10.00  
Pabst Blue Ribbon 16oz. \$10.00



\$ TESSERACT  
SIXPACKS.JPG  
OUTPUT.TXT

MN ER WMOU  
UFLW >300!

OMFIVW 2<  
WMSOSFIHMU  
SCAM...  
M.FIMMMS. :EN

TWH3OM.N-.  
50:2?"—  
UCFIWIN-CM... FA  
TU OONOIAON  
HOUNCWMOOHH  
MAMAS..

. XOU

- A\_M

# IT GOT BETTER WITH TUNING BUT... NOT GREAT.

We may obtain *good* or *acceptable* results with Tesseract for OCR, but the *best accuracy* will come from training custom character classifiers on *specific* sets of fonts that appear in actual real-world images.

Don't let the results of Tesseract OCR discourage you — simply manage your expectations and be realistic on Tesseract's performance. There is no such thing as a true "off-the-shelf" OCR system that will give you perfect results (there are bound to be some errors).

# THE EPIPHANY: GOOGLE CLOUD VISION

# LIVE DEMO



**EVEN BETTER:  
THE PRICE**

**TO  
DEMONSTRATE,  
I'M NOW GOING  
TO EAT AN  
ENTIRE  
MONTH'S  
WORTH OF MY  
OCR BUDGET**



**Section 3**

**WHAT'S  
STILL HARD**

**OKAY, THAT  
WAS EASY**

**WHERE  
ARE THE  
HARD  
PROBLEMS  
AT?**

**NEW BELGIUM FAT TIRE**

5.5

Amber / Red Ale - Colorado - 5.2% - American Pint

An Amber Ale with toasty, biscuit like malt flavors and a hoppy freshness.

**SMITHWICK'S**

6

Amber / Red Ale - Ireland - 4.4% - English Pint

Pours a coppery red color with a small amount of lacing and head. Mildly hopped with a roasted malt finish.

**PERRIN POOP YOUR PANTS CHOCOLATE BOCK** L

6.5

Bock - Michigan - 5.8% - American Pint

This unique beer is made using a blend of fine chocolates, cacao, and specialty malts, which deliver a pleasing taste for every beer lover.

**SHORT'S LONDON FOG** L

7

Brown Ale - Michigan - 6.7% - American Pint

Notable herbal aromatics including a light citrus spice and a touch of mint are evident from first sniff. Pleasing fruity flavors of peach and raspberry result from the interesting union of malt sweetness and bold tea.

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**DARK & BOLD**

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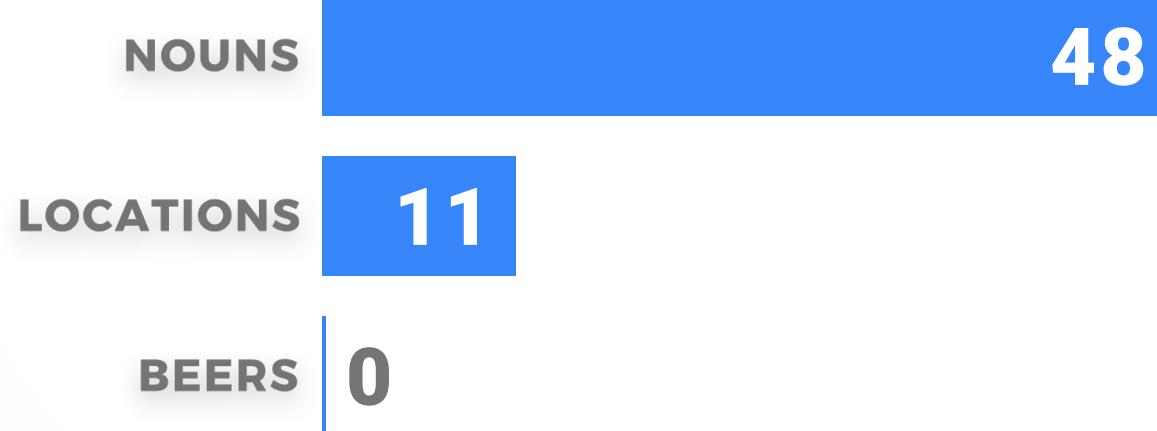
FOUNDRY DIRTY RASTAARD

WHICH  
OF  
THESE  
TEXT  
BLOCKS  
ARE  
BEERS?

<EVIL TWIN><sub>6</sub> NO MORE <BRUNCH IPA><sub>4</sub> - <New York><sub>7</sub> - 6.5% - <American><sub>1</sub> <Pint IPA><sub>5</sub> featuring <Nelson Sauvin><sub>3</sub> hops. <Nelson Sauvin><sub>3</sub>, named after the <Sauvignon Blanc><sub>11</sub> <grape><sub>9</sub>, is a <variety><sub>12</sub> of <hop><sub>14</sub> developed and grown in <New Zealand><sub>33</sub>. <MALT><sub>2</sub> <FORWARD><sub>2</sub> NEW <BELGIUM><sub>34</sub> <FATTIRE 5.5><sub>2</sub> Amber / <Red Ale><sub>19</sub> - <Colorado><sub>21</sub> - 5.2% - <American><sub>1</sub> <Pint An Amber Ale><sub>10</sub> with toasty, <biscuit><sub>10</sub> like <malt flavors><sub>20</sub> and a hoppy <freshness><sub>28</sub>. <SMITHWICK'S Amber><sub>37</sub> / <Red Ale><sub>16</sub> - <Ireland><sub>48</sub> - 4.4% - <English><sub>49</sub> <Pint Pours><sub>47</sub> a coppery red <color><sub>29</sub> with a small <amount><sub>24</sub> of <lacing><sub>25</sub> and <head><sub>26</sub>. Mildly hopped with a roasted <malt finish><sub>27</sub>.

<PERRIN><sub>46</sub> POOP YOUR PANTS CHOCOLATE BOCK 6.5 Bock - <Michigan><sub>13</sub> - 5.8% - <American><sub>1</sub> <Pint><sub>18</sub> This unique <beer><sub>22</sub> is made using a <blend><sub>8</sub> of fine <chocolates><sub>23</sub>, <cacao><sub>30</sub>, and <specialty malts><sub>17</sub>, which deliver a pleasing <taste><sub>31</sub> for every <beer lover><sub>32</sub>. SHORT'S <LONDON FOG><sub>66</sub> <I 7><sub>65</sub>. <Brown Ale><sub>63</sub> - <Michigan><sub>13</sub> - 6.7% - <American><sub>1</sub> <Pint><sub>57</sub> Notable herbal <aromatics><sub>61</sub> including a light <citrus spice><sub>64</sub> and a <touch><sub>60</sub> of <mint><sub>59</sub> are evident from first <sniff><sub>35</sub>. Pleasing fruity <flavors><sub>36</sub> of <peach><sub>43</sub> and <raspberry><sub>41</sub> <result><sub>42</sub> from the interesting <union><sub>40</sub> of <malt sweetness><sub>39</sub> and bold <tea><sub>38</sub>. <DARK><sub>56</sub> & BOLD <FOUNDERS><sub>15</sub> <DIRTY BASTARD L><sub>15</sub> <Scotch Ale><sub>44</sub> / <Wee Heavy><sub>62</sub> - <Michigan><sub>13</sub> - 8.5% - Snifter <Dark><sub>58</sub> <ruby><sub>50</sub> in <color><sub>45</sub> with <hints><sub>51</sub> of <smoke><sub>52</sub> and <peat><sub>53</sub> paired with a <malty richness><sub>54</sub> and <hop bitterness><sub>55</sub>.

# GOOGLE CLOUD VISION DETECTED



temperance Beer Co. Evanston IL  
Munster IN\nPIPEWORKS ROTATIN  
IL\nTAPROOM, IPA\nPenrose Bre  
Around the Bend Brewery, Chic  
ford Park ILL\nFAT PUG, OATMEA

10skar Blues Beerito Lager  
Milwaukee, PA / abv 4.4% / 12 ibu  
Leuven, CO / abv 4.0% / 21 ibu  
CIDER/Wyndridge Ginger Cider  
Anderson, NC / abv 5.0% / 10 ibu  
Evil Genius Ma! The Meatloaf  
Long Beach, CA / abv 6.0% / 18 ibu  
Versailles, PA / abv 4.2% / 0 ibu  
Oneville, CA / abv 4.2% / 0 ibu  
Phidgewater Corners, VT / abv 4.7% / 10 ibu  
d IPA  
Terrapin Hopsecutioner IPA  
Atlanta, GA / abv 7.3% / 78 ibu  
Ballast Point Even Keel Session IPA  
Athens, GA / abv 7.3% / 78 ibu  
San Diego, CA / abv 7.7% / 140 ibu  
Sauvage, MI / abv 7.7% / 140 ibu  
San Francisco, CA / abv 7.7% / 140 ibu

I HAVE  
THOUSANDS  
OF THESE.

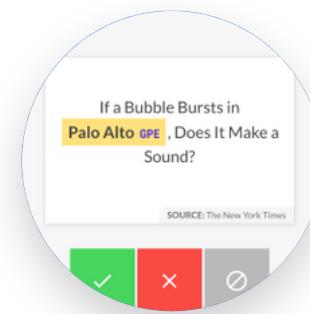
Archibalds Ado  
let: 16  
Pintlet: 2 16oz:  
lard Cider  
Common  
5 Pitcher: 27 Keg  
Ale Emsworth, PA

# CUSTOM NAMED ENTITY RECOGNITION



**SPACY**

<https://spacy.io/>



**PRODIGY**

<https://prodigy.ai>

# ANOTHER LIVE DEMO?





beer  
GOGGLES

# Questions

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 @jameswrubel

 <https://beergoggl.es>

Slides and code available at:

 [https://github.com/jwrubel/gdg\\_presentation](https://github.com/jwrubel/gdg_presentation)