Breadwinner

A hardware driven community for sourdough.
Creative Commons → Kickstarter → Y Combinator → Sourdough

2005 → 2009 → 2016 → 2018

↑

first sourdough loaf
I like to Bake
Why you should try sourdough

- It’s how everyone ate bread up until the 20th century
- It’s way *way* more fulfilling than buying bread
- It’s something your entire family and friends will love
- Maintaining a starter is like having a pet that you eat
- Did I mention how excited your friends and family will be?
- Fermentation is beautiful
Monitoring the Fermentation of Sourdough Starter with Computer Vision

By Justin Lam

August 15, 2018

The process of making sourdough bread involves monitoring the fermentation of the dough. This is typically done by visually observing the dough for signs of activity. However, this method is subjective and can be time-consuming. Computer vision technology offers a way to automate this process by analyzing the dough’s characteristics such as color, texture, and consistency.

The equipment required for this experiment includes a computer vision camera and software for image analysis. The camera should be placed at a fixed distance from the dough to ensure consistent lighting. The software should be capable of identifying key features of the dough such as the presence of bubbles and the consistency of the texture.

The camera should be set to take images at regular intervals, say once a day, and the software should be programmed to analyze each image. The analysis can be done using machine learning algorithms that can identify patterns in the images and predict when the dough is ready to be baked.

The accuracy of the system can be improved by training it on a dataset of images from a variety of sourdough batches. This will ensure that the system can recognize different types of dough and provide accurate predictions.

This experiment shows the potential of computer vision technology in automating the production process of sourdough bread. With further refinement, it could be a valuable tool for bakers and professionals in the food industry.
No Knead Beginner Sourdough Bread

What went well?
Everything! This is maybe the best crumb I've ever had, super fluffy. Read more

Brendan's bake rating

Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Weight</th>
<th>Bakers %</th>
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</thead>
<tbody>
<tr>
<td>Starter</td>
<td>180g</td>
<td>19%</td>
</tr>
<tr>
<td>Unbleached All Purpose Flour</td>
<td>500g</td>
<td>53%</td>
</tr>
<tr>
<td>Whole Wheat Flour</td>
<td>175g</td>
<td>18%</td>
</tr>
<tr>
<td>Unbleached White 273g Bread Flour</td>
<td></td>
<td>29%</td>
</tr>
<tr>
<td>Water</td>
<td>660g</td>
<td>70%</td>
</tr>
<tr>
<td>Salt</td>
<td>18g</td>
<td>2%</td>
</tr>
</tbody>
</table>

Hydration 70%

Bake gallery

Yeast Likely to Succeed

Born July 26th, 2020

150% Hydration level

Bread De Milho

What went well?
This cornbread looks beautiful when it comes out of the oven. The thick crispy c... Read more

Justin's bake rating

Other notes
First bake in my new house!
<table>
<thead>
<tr>
<th>Feeding Date</th>
<th>Max Height</th>
<th>Time to Ripeness</th>
<th>Average Temp</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>09 Mar 01:09</td>
<td>2.42X</td>
<td>9:01</td>
<td>69.23°F</td>
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</tr>
<tr>
<td>25 Feb 20:38</td>
<td>1.72X</td>
<td>26:05</td>
<td>71.67°F</td>
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</tr>
<tr>
<td>23 Feb 23:28</td>
<td>0.20X</td>
<td>3:05</td>
<td>70.46°F</td>
<td></td>
</tr>
</tbody>
</table>
https://github.com/breadwinner-life/community-hardware
Current Breadwinner BOM

- Feather Huzzah ESP32
- Sensor - Time of Flight VL6180
- Sensor - Temperature MCP9808
- Feather Adalogger
- 8gb Sandisk SD Card
- Feather Proto
- Long Female Headers - Feather
- Short Male Headers - Feather
- Neopixel breakout (5 pack)
- Male/Male Jumper Wires
- Buttons
What this is

- A contribution back to the community that inspired me
- Some insight into how I’ve been building Breadwinner
- A cry for help writing firmware
What this isn’t

- Good Code That I Am Proud Of (it just works)
- Anything close to final or production code
- A “true” client for Breadwinner (no API access, yet)
- Very well documented
Help

- Let me know if you try this at home
- If you do, we can talk about API access
Data? Data.

There’s a lot of interesting questions we can begin to ask and answer when we have lots of data from starters.

- Your starter’s performance relative to the rest of the community (e.g. your starter is in the 98% for growth)
- Correlate location and temperature with performance
- Identify clusters & starters based on speed
- Use bake ratings for “ground truth” on starter performance
Thank you

https://github.com/breadwinner-life/community-hardware

@tryBreadwinner

Questions? Answers?

Drop me a line: fred@breadwinner.life