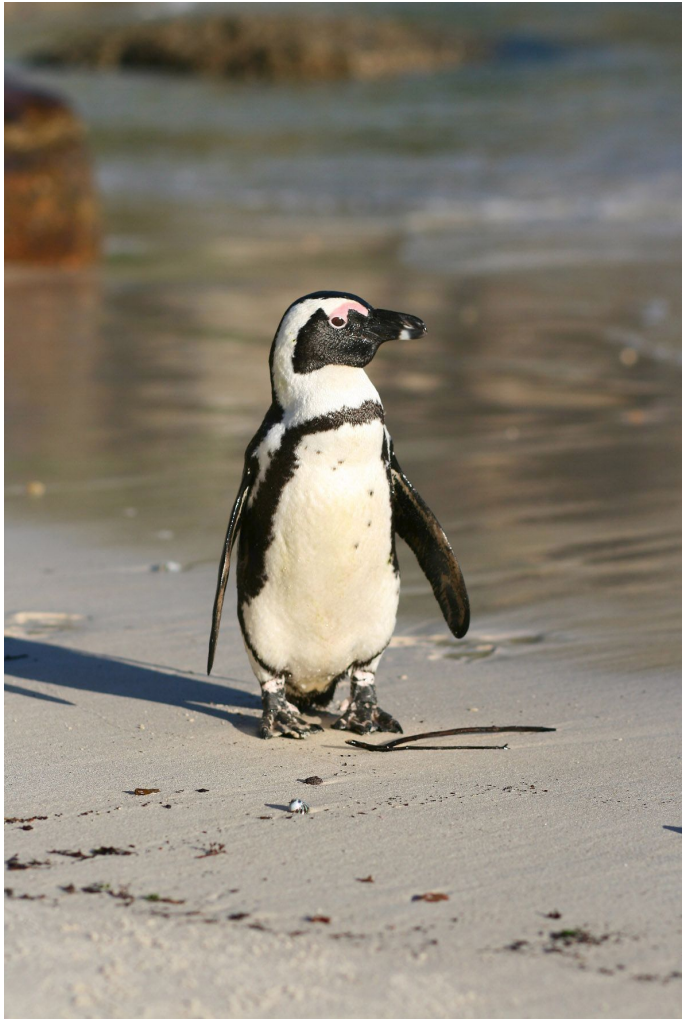
The Quest for Prof. Dodds' Age

Nick Grisanti and Josh Cheung



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Waddles Grisanti and Josh Cheung

Vision

Can we use **Machine Learning**
to estimate someone's age?

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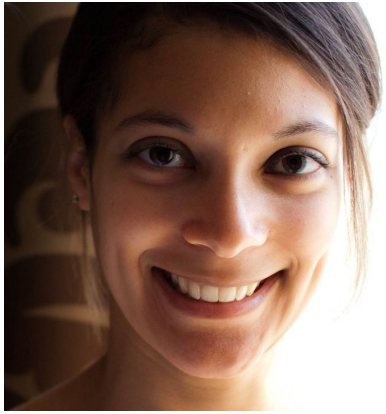
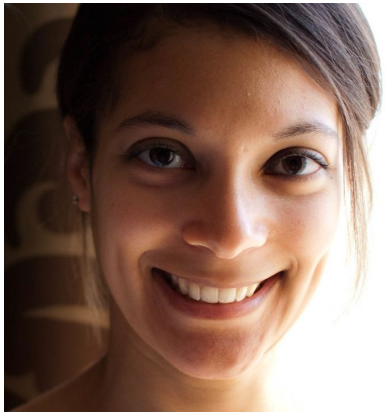
to estimate someone's age?








Age: 42



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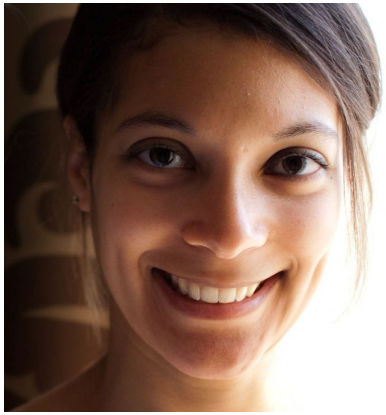


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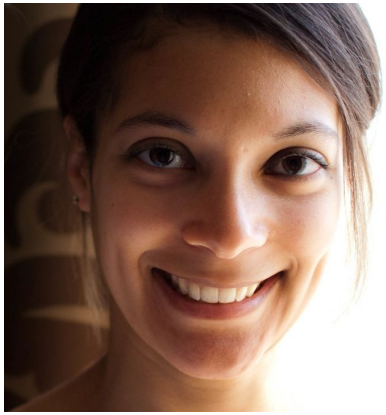

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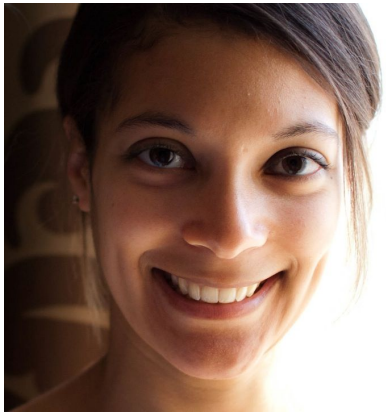

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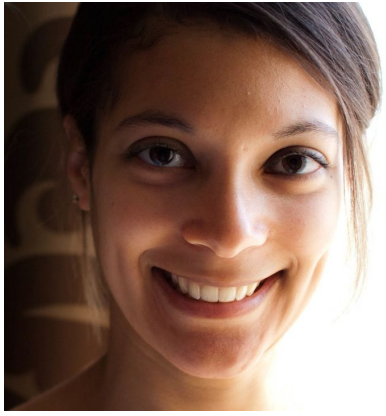

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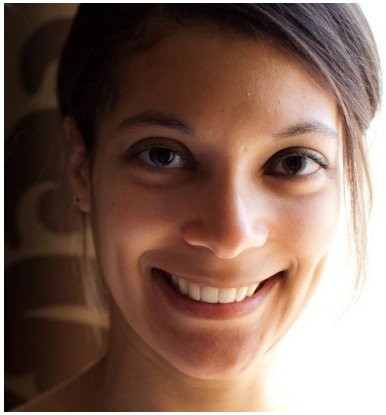


Age: 42

Age: 42

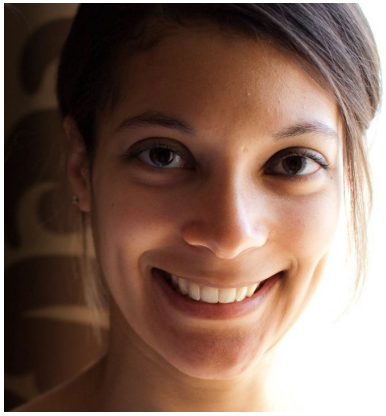
Age: 109

Age: 42

Age: 42

Age: 42

Age: 11



Age: 42

Age: 42

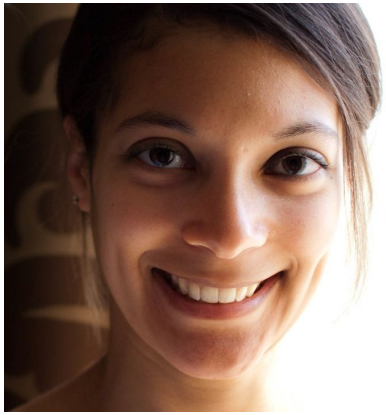
Age: 109

Age: 42

Age: 42

Age: 42

Age: 11



Age: 42

Age: 42

Age: 109

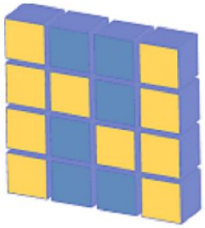
Age: 2

Dataset

Dataset: [from Kaggle]

# age Age of the person in the image	# ethnicity Specifies the ethnicity of the person	# gender Gender of the person	A img_name Name of the Image	A pixels Array to String of the image pixels
1 … 116	0 … 4	0 … 1	23479 unique values	23315 unique values
1	2	0	20161219203650636.jpg.chip.jpg	129 128 128 126 127 130 133 135 139 142 145 149 147 145 146 147 148 149 149 150 153 153 153 152 153 ...
1	2	0	20161219222752047.jpg.chip.jpg	164 74 111 168 169 171 175 182 184 188 193 199 200 199 200 196 198 192 193 188 187 186 187 188 183 1...
1	2	0	20161219222832191.jpg.chip.jpg	67 70 71 70 69 67 70 79 90 103 116 132 145 155 161 166 169 175 177 178 179 180 183 186 187 188 192 1...

Libraries



NumPy

pandas

matplotlib

fast.ai

PYTORCH

OpenCV

Progress

Preprocessing Data:

- Needed to reformat data to include just the person's age and the image
- We had trouble downloading the jpgs, so we had to reformat the space separated string of pixel values into a saved jpg

	age	ethnicity	gender	img_name	pixels
0	1	2	0	20161219203650636.jpg.chip.jpg	129 128 128 126 127 130 133 135 139 142 145 14...
1	1	2	0	20161219222752047.jpg.chip.jpg	164 74 111 168 169 171 175 182 184 188 193 199...
2	1	2	0	20161219222832191.jpg.chip.jpg	67 70 71 70 69 67 70 79 90 103 116 132 145 155...
3	1	2	0	20161220144911423.jpg.chip.jpg	193 197 198 200 199 200 202 203 204 205 208 21...
4	1	2	0	20161220144914327.jpg.chip.jpg	202 205 209 210 209 209 210 211 212 214 218 21...

	age	fname
0	1	img_0
1	1	img_1
2	1	img_2
3	1	img_3
4	1	img_4

Training the Model

Start with pre-trained general vision models (ResNet, DenseNet)

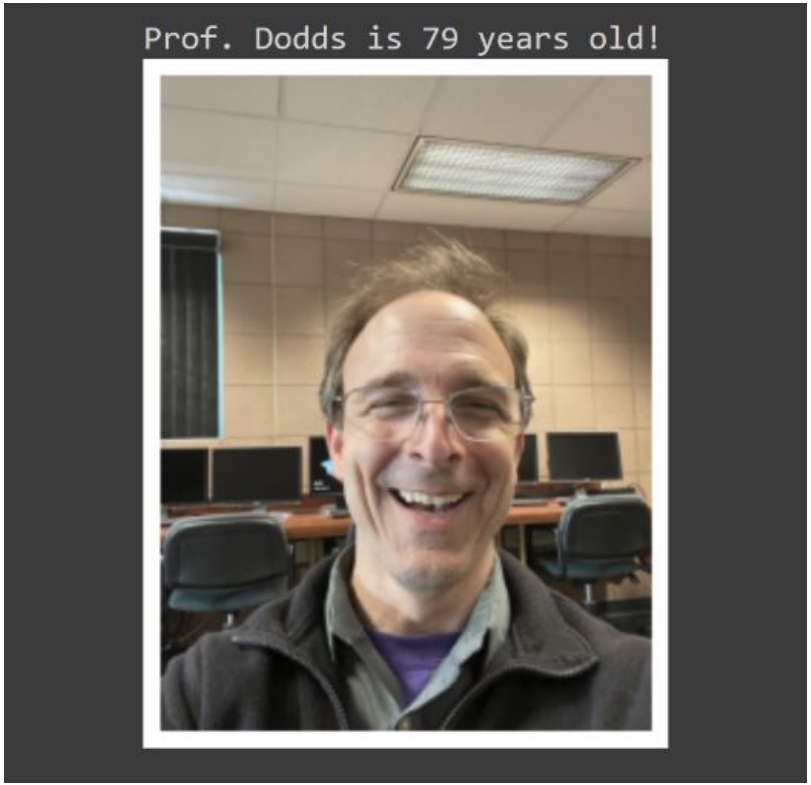
Vary network depth

Overfitting for larger networks

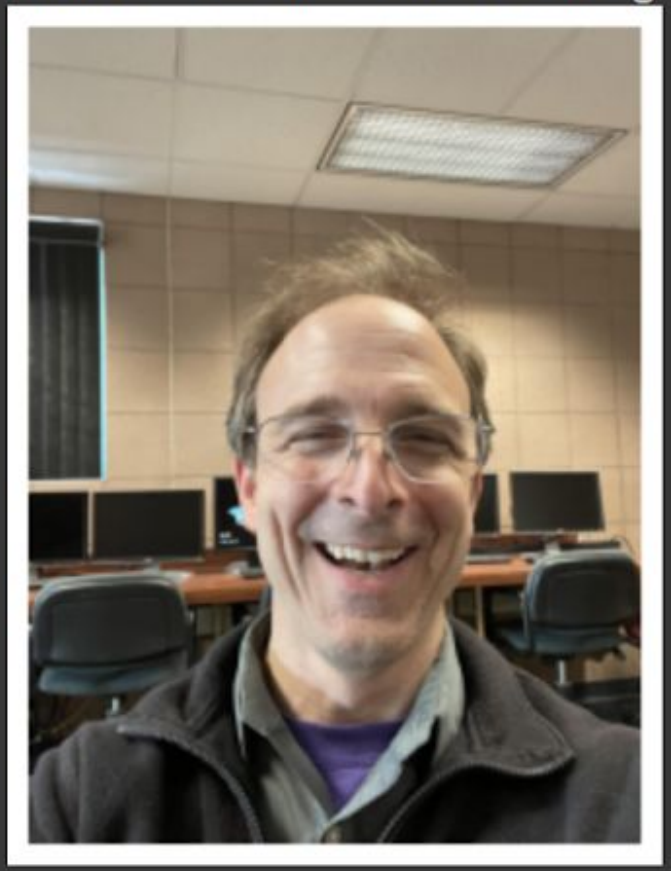
First Attempts

He old!

Classification vs. Regression



```
Prof. Dodds is 41.7028 years old!
Rounded to the nearest integer, Prof. Dodds is 42 years old!
```

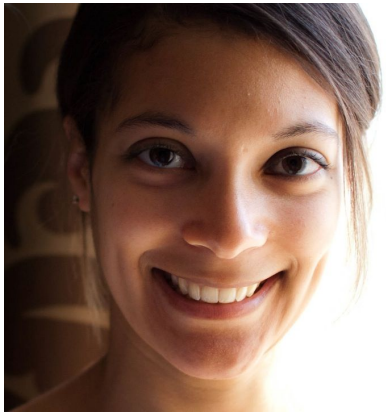


Age: 39

Age: 25

Age: 39

Age: 34



Age: 15

Age: 46

Age: 17

Age: 35

Next Steps

Try more pretrained models

Use more data

Pop-Tarts: Releases a new flavor

Dodds: