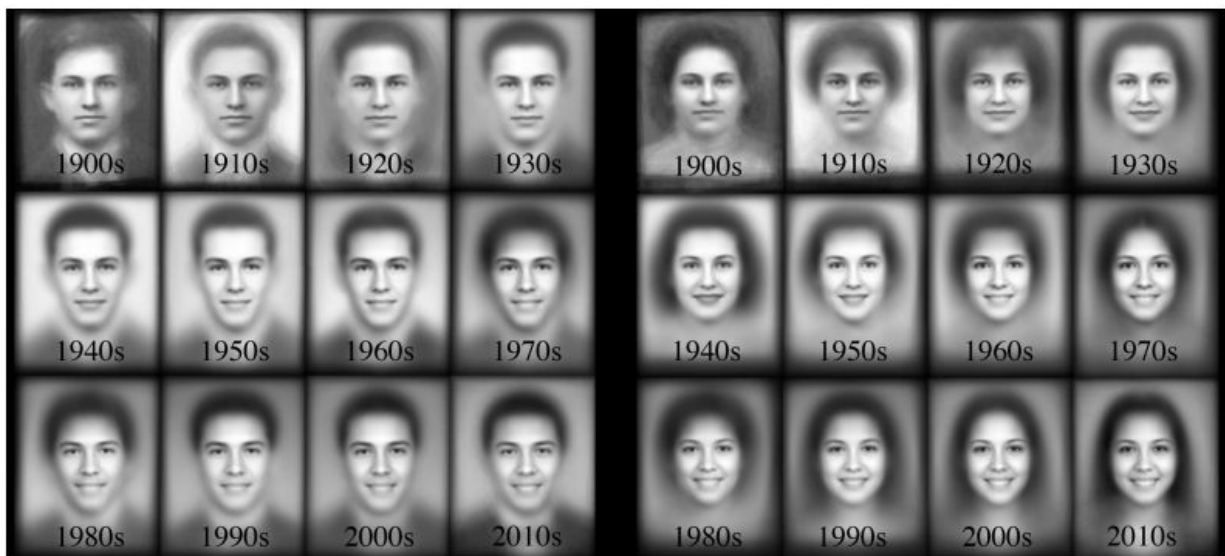


# Saying cheese as style curiosity: Yearbook photos studied

November 28 2015, by Nancy Owano

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Average images of students by decade. The evolving fashions and facial expression throughout the 20th century are evident in this simple aggregation. For example, notice the increasing extent of smiles over the years and the tendency in recent years for women to wear their hair long. In contrast, note that the suit is the default dress code for men throughout the 20th century. Credit: Shiry Ginosar et al. [arXiv:1511.02575](https://arxiv.org/abs/1511.02575) [cs.CV]

Writers, anthropologists, historians make use of written records, relics and works of art to tell a complete story but now researchers from the University of California Berkeley and Brown remind us that there is another path to humanities research, and this is where computer and

social sciences cross paths. That path is in photographs and the technique involves making good use of photo datasets.

They wrote that "we believe that the use of largescale historical image datasets such as ours in conjunction with data-driven methods can radically change the methodologies in which visual cultural artifacts are employed for humanities research."

The title of their work: "A Century of Portraits: A Visual Historical Record of American High School Yearbooks."

They made use of a dataset of 37,921 frontal-facing American high school yearbook photos; this allowed them to use computation "to glimpse into the historical visual record too voluminous to be evaluated manually." Authors are Shiry Ginosar, Kate Rakelly, Sarah Sachs, Brian Yin and Alexei Efros.

*MIT Technology Review* summarized their methods. The photos had been digitized on large scale by local libraries in the U.S. "Ginosar and co downloaded over 150,000 of these portraits. After [removing](#) those that were not full frontal portraits, they were left with some 37,000 images from more than 800 yearbooks from 26 U.S. states," said *MIT Technology Review*.

"They then grouped the portraits by decade and superimposed the images to produce an 'average' face for each period. This process revealed other 'average' features for each period such as hairstyle, clothing, style of glasses, and even average facial expressions. The image above shows these averages for each decade for men and women."

Their paper was posted earlier this month on the *arXiv*. "This plethora of artifacts documenting our 'visual culture' is a treasure trove of knowledge as yet untapped by historians," the team said.

Their work shows that if a photo is worth hundreds of words then for historians a vast database of photos unfolds rich information about styles and attitudes as they shift over time.

*MIT Technology Review* commented: In mining the database of yearbook photos, a machine-vision algorithm revealed [changes](#) in hairstyles, clothes and even smiles over the last 100 years.

Smiling when being snapped is one of the interesting observations from the authors. American students are ordered to look happy and grin for the photographer on school-picture day but the authors noted that this was not the norm in years back.

They said, "in the late 19th century people posing for photographs still followed the habits of painted portraiture subjects. These included keeping a serious expression since a smile was hard to maintain for as long as it took to paint a portrait. Also, etiquette and beauty standards dictated that the mouth be kept small – resulting in an instruction to 'say prunes' (rather than cheese) when a photograph was being taken."

The researchers used phrases such as "lip-curvature metric" and "smile intensity metric" in their discussion of yearbook portraits over the years in the United States.

Among the paper's contributions is that it serves as a demo of data-driven method applied in order to discover historical visual patterns—how styles and portrait-posing habits change over time in a restricted, fixed visual framework.

"We demonstrated the use of various techniques for mining visual patterns and trends in the data that significantly decrease the time and effort needed to arrive at the type of conclusions often researched in the humanities."

**More information:** A Century of Portraits: A Visual Historical Record of American High School Yearbooks, arXiv:1511.02575 [cs.CV] [arxiv.org/abs/1511.02575](https://arxiv.org/abs/1511.02575)

## Abstract

Many details about our world are not captured in written records because they are too mundane or too abstract to describe in words. Fortunately, since the invention of the camera, an ever-increasing number of photographs capture much of this otherwise lost information. This plethora of artifacts documenting our "visual culture" is a treasure trove of knowledge as yet untapped by historians. We present a dataset of 37,921 frontal-facing American high school yearbook photos that allow us to use computation to glimpse into the historical visual record too voluminous to be evaluated manually. The collected portraits provide a constant visual frame of reference with varying content. We can therefore use them to consider issues such as a decade's defining style elements, or trends in fashion and social norms over time. We demonstrate that our historical image dataset may be used together with weakly-supervised data-driven techniques to perform scalable historical analysis of large image corpora with minimal human effort, much in the same way that large text corpora together with natural language processing revolutionized historians' workflow. Furthermore, we demonstrate the use of our dataset in dating grayscale portraits using deep learning methods.

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