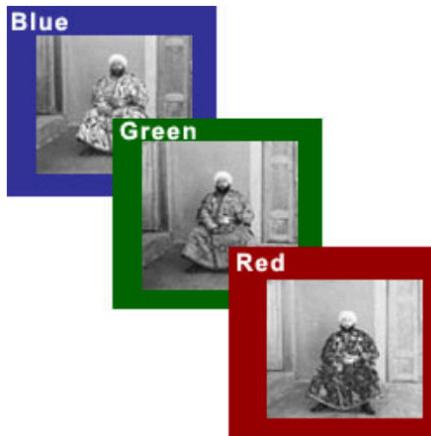


Images of the Russian Empire: Colorizing the Prokudin-Gorskii photo collection

18M



Background

Sergei Mikhailovich Prokudin-Gorskii (1863-1944) [Сергей Михайлович Прокудин-Горский, to his Russian friends] was a man well ahead of his time. Convinced, as early as 1907, that color photography was the wave of the future, he won Tzar's special permission to travel across the vast Russian Empire and take color photographs of everything he saw including the only color portrait of Leo Tolstoy. And he really photographed everything: people, buildings, landscapes, railroads, bridges... thousands of color pictures! His idea was simple: record three exposures of every scene onto a glass plate using a red, a green, and a blue filter. Never mind that there was no way to print color photographs until much later -- he envisioned special projectors to be installed in "multimedia" classrooms all across Russia where the children would be able to learn about their vast country. Alas, his plans never materialized: he left Russia in 1918, right after the revolution, never to return again. Luckily, his RGB glass plate negatives, capturing the last years of the Russian Empire, survived and were purchased in 1948 by the Library of Congress. The LoC has recently digitized the negatives and made them available on-line.

Overview

The goal of this assignment is to take the digitized Prokudin-Gorskii glass plate images and, using image processing techniques, automatically produce a color image with as few visual artifacts as possible. In order to do this, you will need to extract the three color channel images, place them on top of each other, and align them so that they form a single RGB color image.

My Works

I realized image alignment and automatic cropping and white balance in this project. You could see a brief presentation below:

Smaller Images (.jpg)

cathedral.jpg

Blue shift: [-2, -5] Red shift: [1, 7]

Aligned



White Balance



monastery.jpg

Blue shift: [-2, 3] Red shift: [1, 6]

Aligned



White Balance



tobolsk.jpg

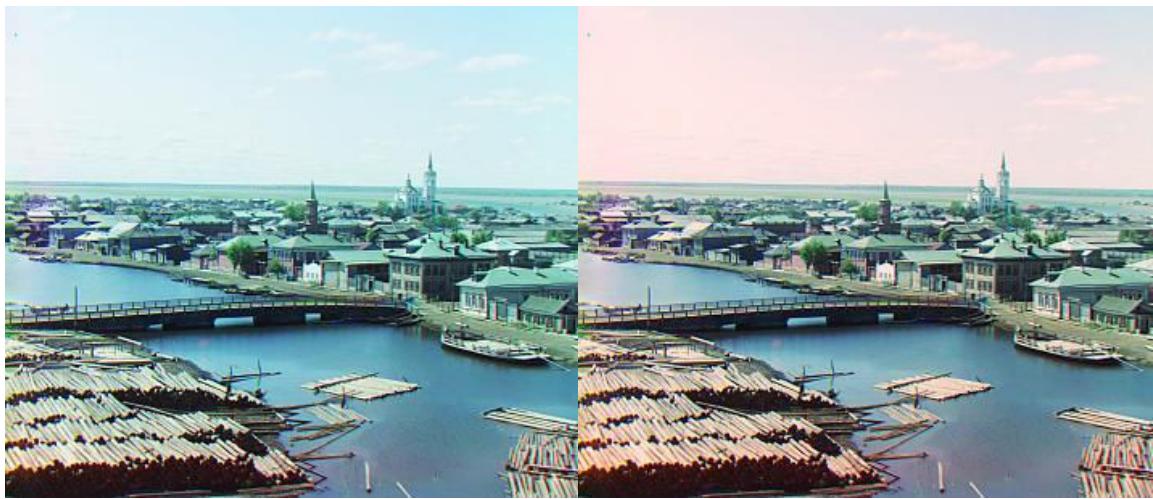
Blue shift: [-3, -3] Red shift: [1, 4]

Aligned



White Balance





Larger Images (.tif)

church.tif

Blue shift: [-3, -25] Red shift: [-8, 33]

Aligned

White Balance



emir.tif

Blue shift: [-24, -48] Red shift: [17, 57]

Aligned

White Balance



harvesters.tif

Blue shift: [-17, -59] Red shift: [-2, 64]

Aligned



White Balance



icon.tif

Blue shift: [-18, -41] Red shift: [5, 49]

Aligned



White Balance



lady.tif

Blue shift: [-7, -48] Red shift: [3, 58]

Aligned



White Balance





melons.tif

Blue shift: [-10, -83] Red shift: [3, 95]

Aligned

White Balance



onion_church.tif

Blue shift: [-26, -50] Red shift: [11, 58]

Aligned

White Balance



sculpture.tif

Blue shift: [11, -33] Red shift: [-16, 107]

Aligned



White Balance



self_portrait.tif

Blue shift: [-29, -77] Red shift: [8, 98]

Aligned



White Balance



three_generations.tif

Blue shift: [-15, -46] Red shift: [-2, 57]

Aligned



White Balance



train.tif

Blue shift: [-7, -42] Red shift: [26, 43]

Aligned



White Balance

