# University at Buffalo, Computer Science and Engineering
# CSE 468/568: Robot Algorithms

## Lab 3: Colorizing the Prokudin-Gorskii photo collection

Sergei Mikhailovich Prokudin-Gorskii (1863-1944) was a man ahead of his time. He conceived a method for recording color images before color photography. His method was simple, but practical. He took photos of various subjects across the Russian Empire. Each subject was photographed three times. Once with a Blue filter, once with a Green filter and finally once with a Red filter. These three photographs made up a set that was placed onto plate glass. His intention was to project each image on top of each other using Blue, Green and Red light to combine them into a color photograph.

**Input Images:**

**Main Script:**

I splitted the images by dividing the whole image by 3 and assign each part to Blue, Green and Red respectively.

**Non-Aligned Images:**
For the non aligned images I just gave the color channel to each image and superimposed one over another. The result was a blurred colored image because of the non alignment of the images.

**SSD:**
**lm_align1.m**
In this function we used the sum of square distance to compare and align the images.
First we took a small window and then SSD on it to find the need of alignment in the image Green and image Red on the basis of the blue base image.
After the alignment we superimposed the image on one over another and get a aligned color RGB image.

**NCC:**

**lm_align2.m**

In this function we used the Normalised Cross Correlation to get the maximum offset and align the images.

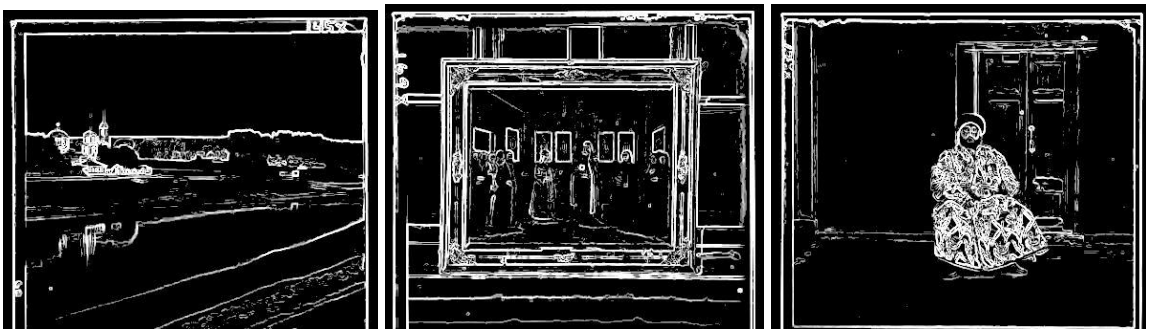
First we took a small window and then NCC on it to find the need of alignment in the image Green and image Red on the basis of the blue base image.

After the alignment we superimposed the image on one over another and got an aligned color RGB image.

**Harris.m**

**lm_align3.m:**

In this function I used the sobel operator to determine the corner and edges of the image.



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