

Project Implementation for ITCS5152

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Project 2 is required for every student in this class!

(a) You need to select **at least 3 projects** from 6 lists; **Project 2 is required for everyone!**

(b) You should send your selections and list of team members to TA (**Changlin Li, cli33@uncc.edu**);

© You can make appointments with TA to demonstrate your implementations;

(d) The deadline for project due is **May 7, 2020.**

Projects

- Image Filtering
- RANSAC for Image Alignment (**require for every student in this class!**)
- Scene Recognition with Bag of Words
- Object Detection with a Sliding Window
- Object Recognition with Deep Learning
- Low Power Mobile Computer Vision

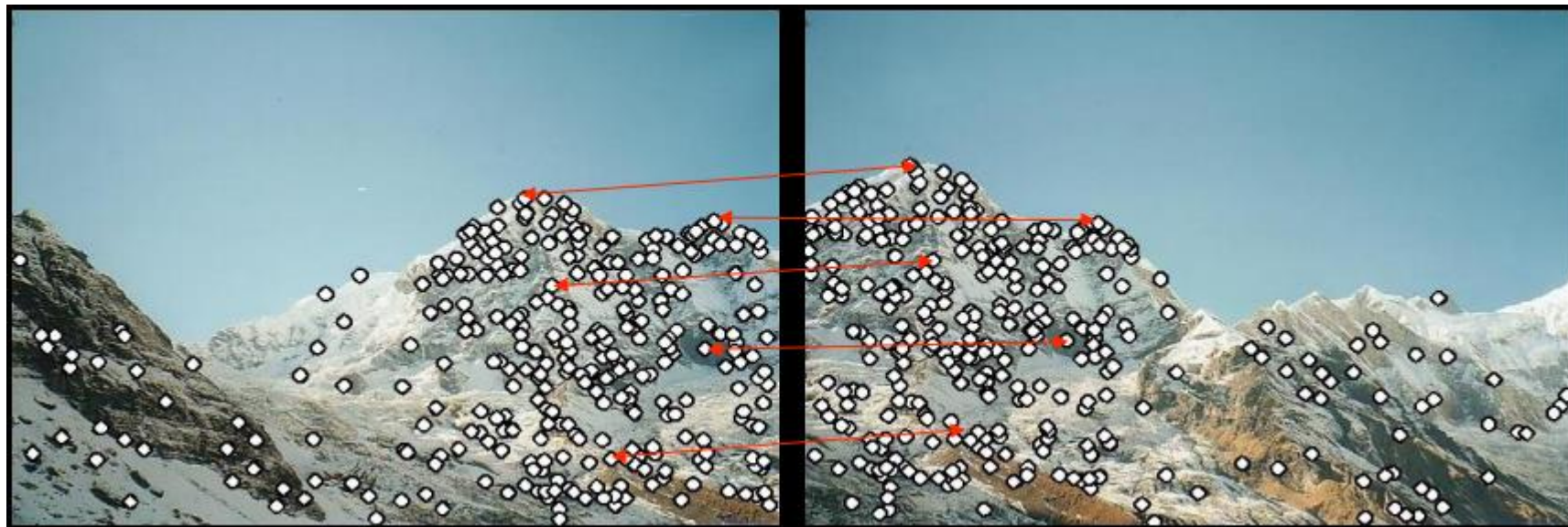
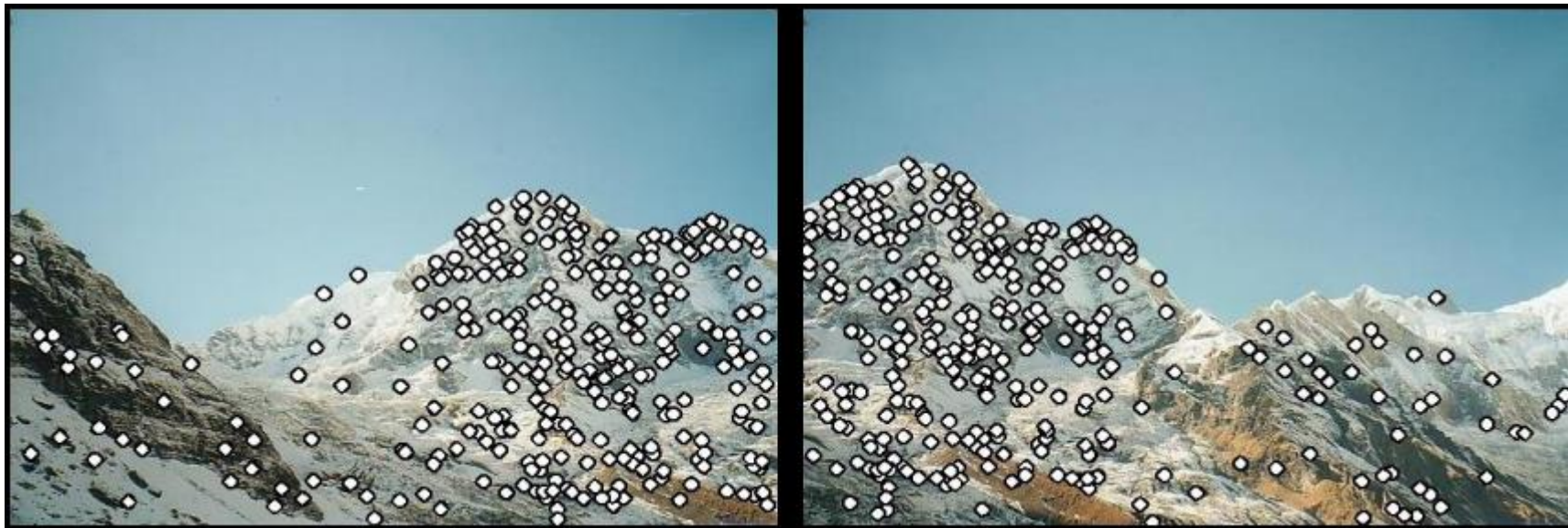
Project 1: Image Filtering

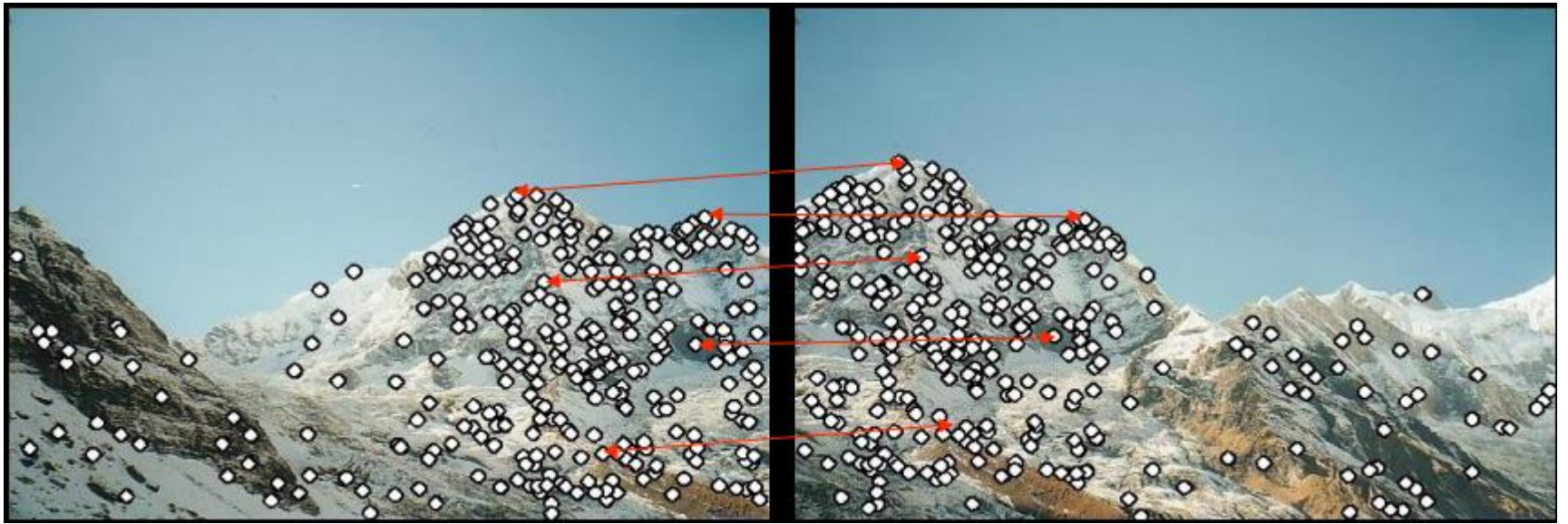
- Design a system for image filtering: you can select one of these two filters: (a) Gaussian filter; (b) sharpening filter.
- Experimental result demonstration: original images **vs.** filtered images

Project 2: RANSAC for Image Alignment

- Design a system for automatic image alignment via fast matching of their local image features:
(a) SIFT feature extraction from images; (b) RANSAC algorithm for fast SIFT feature matching between two images.

This project is required for every student in this class!







Project 3: Scene Recognition via Bag of Visual Words

- Design a system for scene recognition (image classification) by using Bag of Visual Words for image representation and SVM classifier for image classification: (a) dictionary with 1000 visual words should first be learned; (b) images are represented as histograms of visual words; (c) SVM classifier for 20 image categories should be trained; (d) system interface should also be implemented.

Project 4: Object Detection via sliding windows

- Design a system for object detection via sliding windows
- You can use traditional approaches or deep learning one

Project 5: Object Recognition via deep learning

- Design a system for object recognition via deep learning
- You can use Fast RCNN or others

Project 6: Low Power Mobile Computer Vision

- Design a system for image classification, or object detection/recognition via light-weight networks such as mobilenet, sequeezenet and many others

Individual Projects

- We will **not** offer group project
- Every student should finish at least **3** projects **individually!**