



Image Processing

Final Project



Requirements

- Team: 2~3 students (find a leader)
- Use **MATLAB**, add GUI to your program, google drive to share image and code.
- **Real-world problems** can be listed on your resume, extra bonus for the problems from Co-op.
- Image source: your own pictures (preferred, webcam on your laptop/phones, pick the quality and angle of images) or existing online image database (not preferred)
- Algorithms: permit use existing algorithms from publications
- Talk to me with ideas ASAP



Deliverables

- Proposal presentation (15%)
- Group presentation (45%)
- MATLAB project (20%)
- Poster (20%)
- Peer evaluations (up to 50% of the final project grade could be altered)



Proposal presentation

- Problem to be solved (motivation)
- Literature review (existing solutions/challenges)
- Image processing algorithms will be used (flowchart)
- Image data plan to be used (acquisition method, pilot image samples)
- Test cases (various situations), Expected outcomes/results
- Milestone, timeline, works for each member

Proposal evaluation form

Group	Interestingness (motivation, significance)	Literature review	Clarity	Professionalism	Timeline	Total
1	/30	/10	/30	/20	/10	/100
2	/30	/10	/30	/20	/10	/100
3	/30	/10	/30	/20	/10	/100
4	/30	/10	/30	/20	/10	/100
5	/30	/10	/30	/20	/10	/100
6	/30	/10	/30	/20	/10	/100
7	/30	/10	/30	/20	/10	/100
8	/30	/10	/30	/20	/10	/100



Final Presentation (1)

- Whole team!
- Everyone need do presentation.
- Sections
 1. Motivation (problem solved)
 2. Relevant background
 3. Design: flow charts, screenshots, etc
 4. Image dataset description and algorithms(list the algorithms you learned through this course)
 5. Challenge (story, what you learned through the project, any changes with proposal).
 6. Demo! Questions!

Final Presentation (2)

- Evaluation (i.e. grading) factors...
 - » Motivations (interesting, challenge, real-world problem)
 - » Length, clarity, professionalism (practice!)
 - » Member participate
 - » Demo quality (subjective)
 - » Results (same or better than existing methods)
- Audience participation: ask great/insightful/awesome questions!



1-6-6 Rule

- One idea per slice
- Six bullet points per slice
- Six words per bullet point
- Highlight the bullet you are talking
- Use more pictures rather than text
- 'Questions' for the last slice



Final presentation evaluation form

Group	Interest	Group work	Clarity	Professionalism	Demo	Total
1	/20	/10	/20	/10	/40	/100
2	/20	/10	/20	/10	/40	/100
3	/20	/10	/20	/10	/40	/100
4	/20	/10	/20	/10	/40	/100
5	/20	/10	/20	/10	/40	/100
6	/20	/10	/20	/10	/40	/100
7	/20	/10	/20	/10	/40	/100
8	/20	/10	/20	/10	/40	/100

Note: Presentation time: no more than 12 minutes (including demo)



Project code

- Upload through Blackboard (or shared drive if you have a huge number of images)
- Including detailed user manual. You should ask someone else to run your code following the user manual
- Including several test images. Make sure your code works for those test images
- Including the result images. Please also upload result images for the test images with your code



Poster

- Clear and better demonstration
- Key components:
 1. Title (clear and easy to know what you are doing)
 2. course name (**COMP3800 Image Processing**), Group and authors' name
 3. Background (or Introduction/Motivation)
 4. Methods (including data source, algorithm, flowchart, etc.)
 5. Results (accuracy, compare with other existing methods, picture of results)
 6. Conclusions (what you learned through this project, possible future improvement, possible application through your project)



Poster

- People usually only spend several minutes for each poster, use more pictures to attract people
- Use PowerPoint to create poster draft, font should not be too small
- Recommended Size: 48" x 36" (Width x Height), color print (photo-quality \$0.91/square foot at WIT)
- We will have a poster tour. Your group will introduce the poster during the tour.
- Sample posters:
https://web.stanford.edu/class/ee368/Project_Spring_13_14/index.html

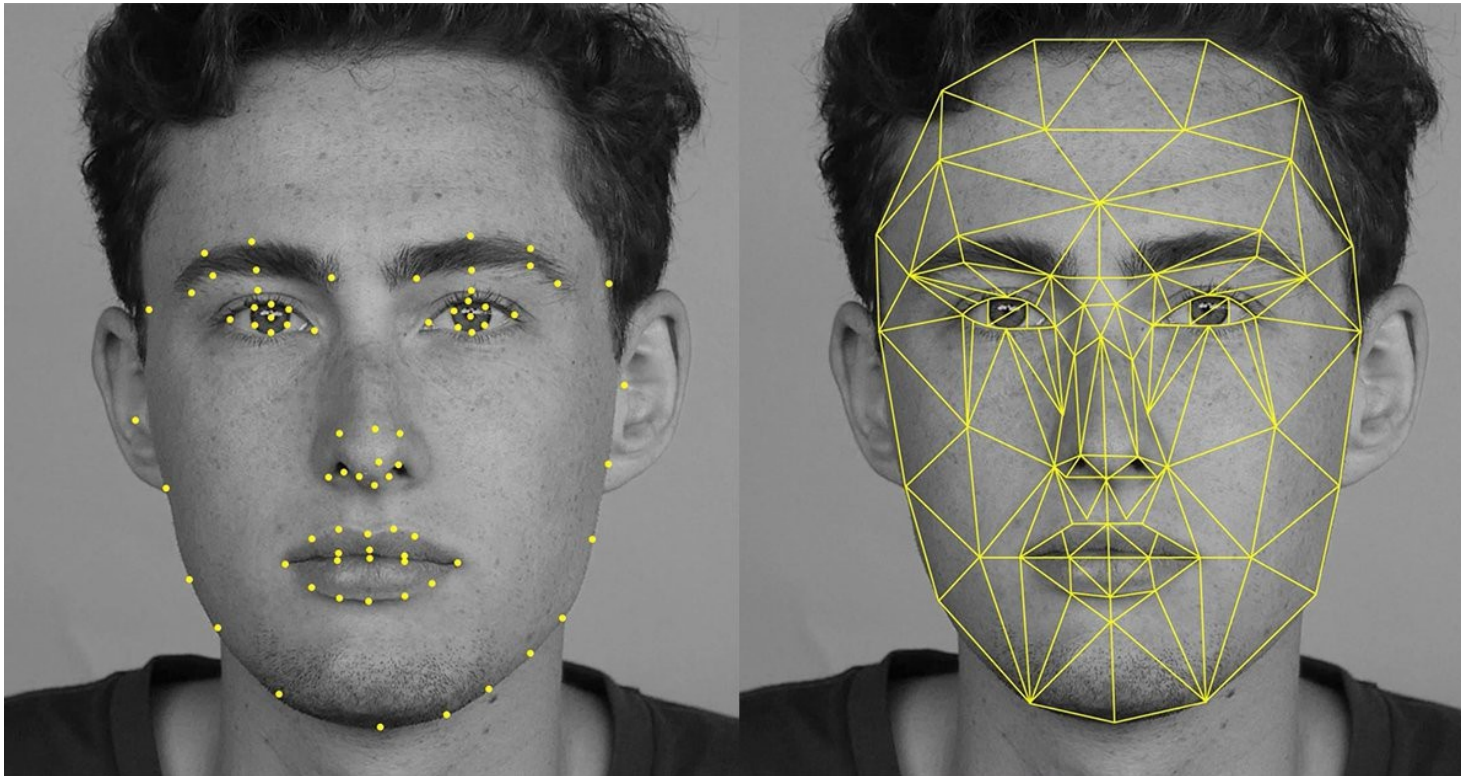
Emotion recognition

- Input: webcam on your laptop



Face recognition

- WIT faculty recognition
- COMP3800 students face recognition



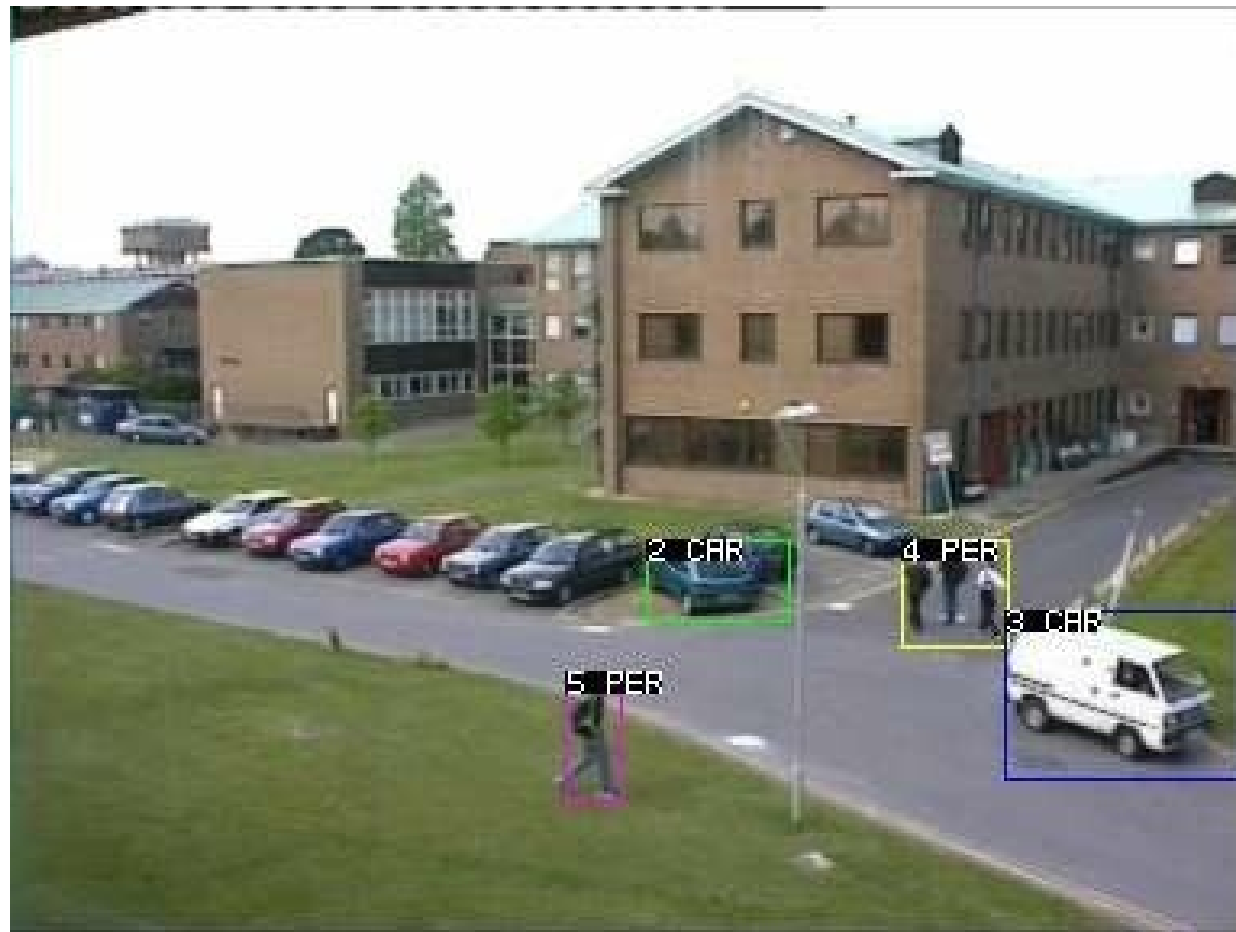
Smart classroom

- Check attendance (use in our class)
- Identify focus of students



Surveillance

- Count number of people or vehicles

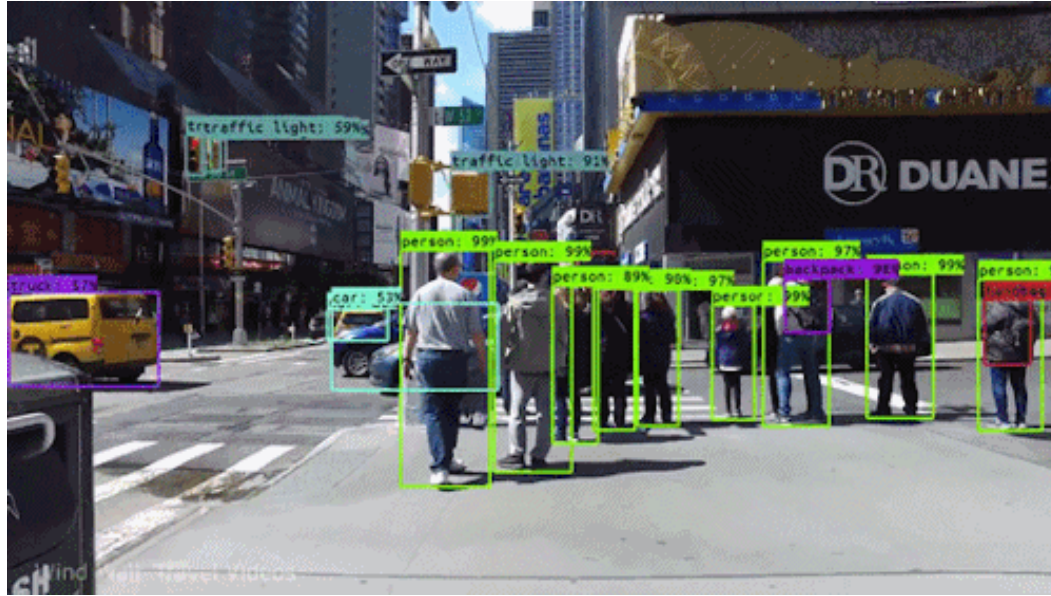




Face Swapping



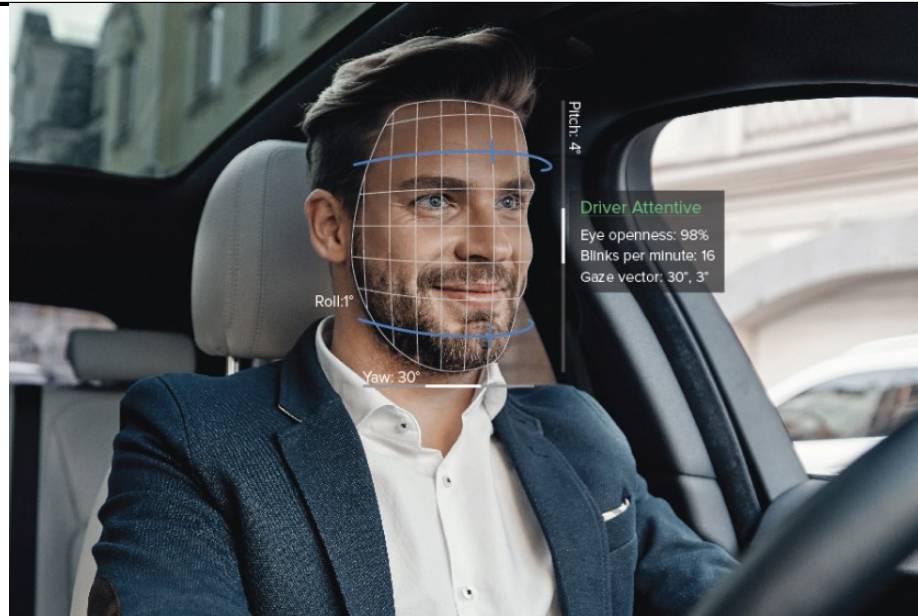
Self driving



- Phone install on dashboard
- Detect cars and pedestrian
- Detect red lights
- Follow lines



Eyesight



- Phone install on dashboard/mirror
- Detect driver eye blinks and focus
- Detect head shake



Potential problems

- Use shared drive (google drive, one drive, drop box, box) to your images, code, and document
- Find out problems early (no response members, delayed works, unsatisfied relations)
- Discuss with me your ideas ASAP, I will tell you my expectations and functions should included in your final demonstration

Enjoy your project!

Each group email me the group member list (section #, Names, and emails)