

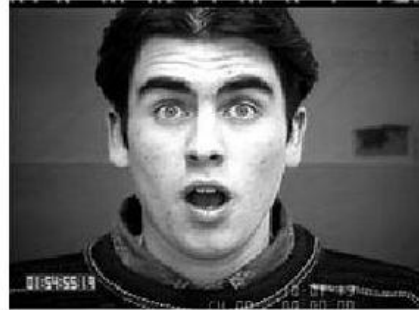
Course Project: "A.I.education Analytics"

COMP 6721

A.I.education Analytics



Disgust



Surprise



Sad



Angry



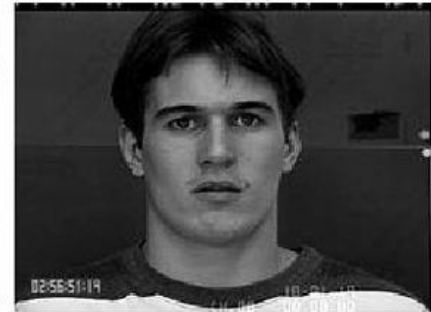
Fear



Happy



Contempt



Neutral



- CNN for Emotion Detection

Classes to detect

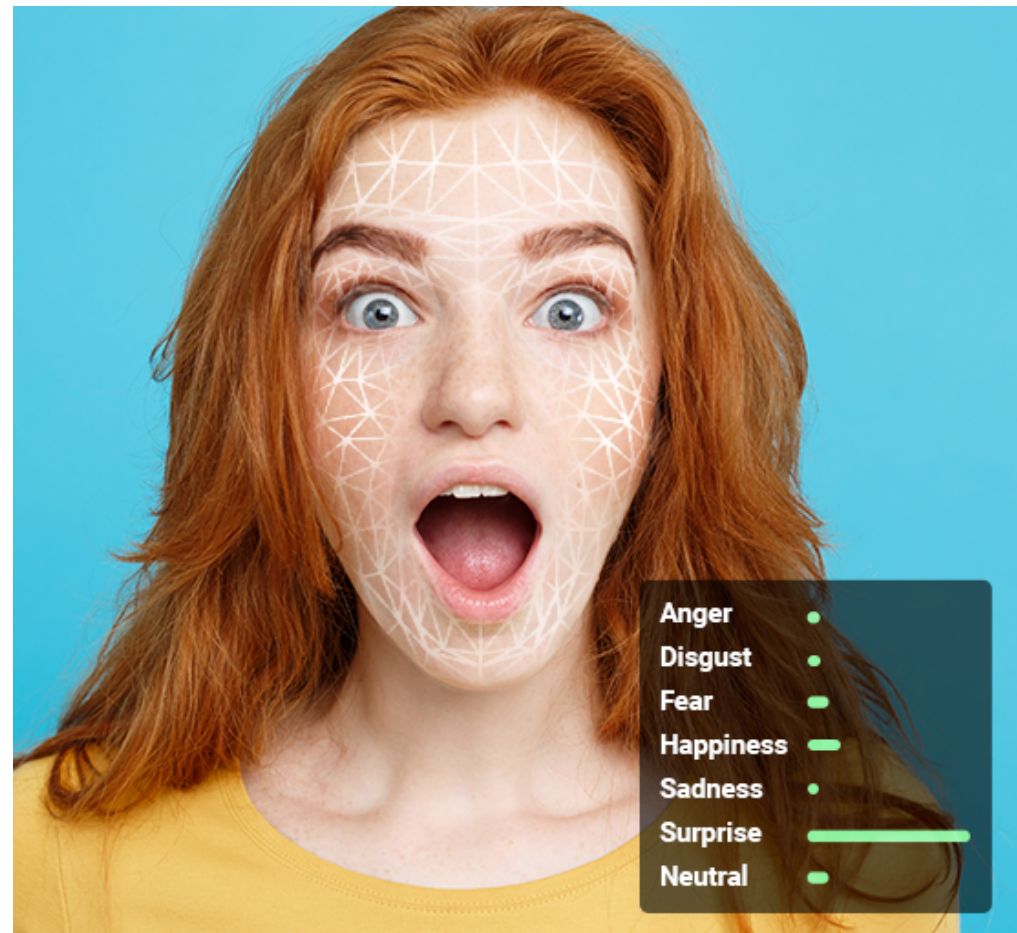
Working on still images of students in a classroom setting (virtual or physical)

Mandatory classes (for all groups):

- Neutral expression
- Engaged/Focused
- Bored/Tired

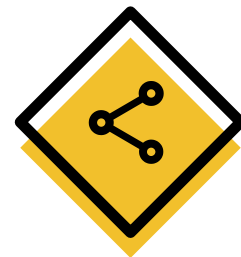
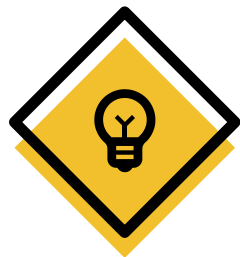
Additional class (your group selects one):

- Angry/Irritated
- Confused
- Distracted





- Project Phases



Part 0: Group formation (starting today)

- You suggest teams on Moodle
- 3 members
- Deadline: Friday 6th
- We announce final teams early next week



Part 1: Data Collection & Cleaning

- Collect datasets
- Data cleaning (e.g., size correction)
- Data labeling
- Dataset Visualization

Part 2: Basic CNN Model & Evaluation

- Using *PyTorch*
- Build model to detect above classes
- Basic evaluation (Accuracy, P, R, F1, Confusion Matrix)
- **Project Demo**

Part 3: Bias Analysis, Model refinement, Deep Evaluation

- Check Model from Part 2 for *bias* (e.g., age, race, gender)
- Improve model, correct bias
- Evaluation with k-fold cross-validation
- **Project Demo**



- Team specialization

Your Project Group

Data Specialist

Responsible for data lifecycle:

- Data sourcing
- Data quality
- Data pre-processing
- Data augmentation
- Exploratory Data Analysis

Training Specialist

Responsible for CNN training:

- Define CNN architecture
- Set hyperparameters
- Monitor training progress
- Fix convergence issues

Evaluation Specialist

Responsible for CNN analysis:

- Compute evaluation metrics
- Diagnose weaknesses
- Visualize results
- Bias analysis
- Cross-validation

Note: specialist does *not* do all the work, but oversees, manages, and distributes sub-tasks to others



01

Submissions & Demos

- Electronic submissions on Moodle
- Late submission penalties
- Must submit *Python* programs, not notebooks
- Project must be demoed for Parts 2&3
- All team members must be present for demos

02

Contribution & Grading

- All team members are expected to contribute equally
- By default, all members get the same marks
- Escalate issues first in team, then to TA, who can further escalate to instructor
- In case of dispute, a formal process is started (will need to prove contribution with Github logs or similar)

03

Academic Integrity

- Review academic code of conduct
- Do not copy any work or data
- Cite sources you use
- You must submit a signed *Expectation of Originality* form (no marks without form)
- Keep your repositories private

04

Most important...

- Don't focus (only) on end performance:
- We will look at how well you managed the whole AI/ML process
- Have fun working on the project!